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Art. I.—THE SOUTH AMERICAN STATES.

HISTORICAL PROGRESS OF SOUTH AMERICA—REVOLUTIONS—SPANISH COLONIAL POLICY—DECLARATION OF INDEPENDENCE—REPORTS OF U. S. COMMISSIONERS UPON SOUTH AMERICA—MR. POINSETT'S VIEWS—SOUTH AND NORTH AMERICAN CHARACTER CONTRASTED—ARAUCANIA—ARGENTINE REPUBLIC—BOLIVIA—BRAZIL—CHILI—COLOMBIA—ECUADOR—GRANADA—VENEZUELA—PARAGUAY—PERU—URUGUAY—PATAGONIA, ETC.

We have had occasion before, to pass under review the historical and statistical progress of the United States, and of those contiguous islands which remain still in the possession of foreign powers, but which it is not too great a stretch of probability to suppose, may ultimately be attached to the government of these states.* Our intention is to prosecute these investigations in regard to every other division of America, and furnish the reader as late, as reliable, and as thorough information upon them, as can be had from any or from all sources together. It is important that we, who occupy so large a portion of it, and are so intimately and closely connected with the rest, should know well and minutely everything that concerns or is likely to affect the interests of this western world. It is a theatre, far removed from all the old limits of civilization, upon which a new and somewhat different people are called upon to perform their parts, amid circumstances and influences widely different from those of nations with whom they are most nearly allied. The history of this population, in all its different manifestations, is as unique as it is interesting, and furnishes materials for additional chapters in the history of man, of society, and of human progress.

The cold and inhospitable regions of the north, which are known as British America; and those which, amid mountains of ice, slope away to the Pacific and to the Asiatic possessions of Russia; the intermediate and but lately well explored divisions of Central America and Mexico, and the vast semi-continent, stretching from the

* Vide Commercial Review, vol. ii.: Art. *Progress of American Commerce;* vol. iv.: *Progress of the Great West;* vol. v.: *The West India Islands.* These are all elaborate papers.

Equator to the South Seas, will furnish abundant fields for investigation in this and succeeding numbers of the Review.

However important the subjects here announced, it must be said, with great regret, that they have hitherto commanded a degree of interest with our countrymen altogether disproportioned to that importance. We have been pleased to know the states of our own confederation, and even that imperfectly, whilst, as to all the remaining portions of America, they have constituted a far more perfect *terra incognita* than those of a fabulous antiquity. The ancient resources of Greece and Rome, and the modern European states, are far more familiarly known and assiduously studied. To be sure, the difficulties of obtaining reliable information in the one case, have been far greater than in the other. From vain jealousies, indifference or indolence, it happens that little has been given to the world calculated to show, in any adequate manner, the true condition and statistical progress or decadence of these divisions of the Western World. Of their discovery, and of the adventurous spirits who found an arena for the highest romance, there has been no dearth of knowledge. Every one can speak of Cortez and Pizarro. Even travellers, who, in general, do so much in extending information of the countries visited, aid us little here. Books have not multiplied upon these points. In fact, we know of scarcely any sufficiently elaborate and reliable for all the purposes desired. However, a thirst for knowledge has been excited by the contests about Oregon and the wars in Mexico, which will eventually result, we doubt not, in the most complete and perfect developments.

On this occasion, we shall confine our attention entirely to South America, a text sufficiently comprehensive for much greater space than that to which we find ourselves necessarily restricted.

The discovery and early settlement of this vast region, whilst it presents little in common with the discovery and settlement of the country to the northward by other European powers, excepting Florida and Mexico, furnishes one of the most romantic and thrilling chapters in the history of mankind:—Valor, endurance, intrepidity in the most trying and terrible exigencies, induced by the basest considerations of rapacity and plunder!—the loftiest spirit, and the most criminal and groveling desires. Not all the attractions of poetry or of chivalry can veil the deformities of a picture in which avarice, blood and slaughter, command so prominent a place. No cruelty could be more refined; no tyranny more systematic and heartless.

The Spaniards profited by the feuds existing among the natives at the period of discovery, and made them the instruments of conquest. They sold the Indians into slavery, and destroyed thousands by the harshest abuse. On the suggestion of Las Casas, commissioners were sent from Madrid to inquire into these abuses, and several regulations were made for their protection, and for the distribution of their labors. These established a less odious but yet perfect system of slavery.

Thousands of these unfortunate people, says the Hon. Joel R. Poinsett, in a paper prepared by him, in 1818, at the request of the

government of Mr. Monroe, were marched every year to Potosi; and although the period of service was only eighteen months, they were attended by a numerous train of friends and relations, who, on the eve of their entering the mines, sang melancholy dirges, and sounding a horn in solemn strains, mourned over them with all the ceremonies with which they used to evince their sorrow on the death of a relative. Their wives and children remained with the conscripts, who, harrassed by a long march, seldom resisted more than a year the excessive labor and noxious air of the mines.

But with this period we will not long delay, since the reader has been for some time in possession of the valuable works of Mr. Prescott, which entirely exhaust the subject.

Our observations upon South America begin at a period much more modern, and will be brought down as nearly as possible to the present day. They include all the states and provinces, except those of French, English and Dutch Guiana, already considered in our last number. The contrast furnished by the picture, when viewed in connection with that we have previously submitted, of the United States of North America, is the most striking and instructive.

In the year 1818, the question of South American affairs was brought before Congress by Mr. Monroe, who submitted the correspondence between Mr. Adams and Mr. Aguirre, the agent of the Government of La Plata, in regard to acknowledging the independence of that republic, then in actual revolution against the Spanish authorities.

The papers which were submitted on that interesting occasion, embrace the diplomatic correspondence, the able letter of Mr. Poinsett, and the elaborate returns of a commission, consisting of Messrs. Rodney, Graham and Bland, who were sent on a special embassy to South America, in order to learn the true state of affairs and condition of the country. These, with the able speeches of that liberal and enlightened statesman, Henry Clay, upon the same subject, are upon the table before us. For later information, we are indebted to the Digest of American Statistics, which, with little system, but great labor, the Hon. John McGregor, of London, has lately made and published.

Up to the period of the Revolution of 1790, in France, South America submitted quietly to its European governors in every particular, however arbitrary the exactions or revoltive the principles of government. A hope of liberty would have seemed visionary and absurd in so grinding a despotism. Force and fear, and a sense of weakness and dependence, suppressed every other feeling than that of passive endurance.

Two viceroys were set up by the Spaniards over their American possessions; the *Viceroy of Mexico* and the *Viceroy of Peru*, under whose jurisdiction all things were placed. To these were added, in 1718, the *Viceroyalty of Santa Fé de Bogota;* in 1731, the *Captain Generalship of Caraccas;* in 1768, the *Captain Generalship of Chili;* in 1778, the *Viceroyalty of Buenos Ayres.*

In 1797, disturbances began to occur in Venezuela, induced by the spread of French revolutionary principles. They were succeeded, in the early part of the next century, by the attack of the British army,

under General Whitlocke, during the English and Spanish war, most gallantly repulsed by the South Americans, who, in this feat of arms and valor, seem for the first time to have been taught their true strength and importance. Such a lesson was not likely to be lost.

When Charles IV. and Ferdinand VII. of Spain renounced authority in favor of the brother of Napoleon, the act was met with loud protestations in the colonies. Neglected by the mother country in the pressing difficulties which surrounded her, and conceiving themselves abandoned entirely, a *Junta* was established in Buenos Ayres, in 1810, which assumed, in its own hands, the reins of government. In 1815, a Congress, at Tucuman, and afterwards in Buenos Ayres, was employed in framing a republican constitution. A declaration of independence was signed on the 9th July, 1816, and soon after followed by a similar declaration from Chili.

We are, however, anticipating, and return to a detail of those facts which minutely mark the progress of the revolution. In the first republican government of Buenos Ayres, the executive and legislative powers were vested in the Deputies; afterwards in an Assembly of Deputies from all the chief towns. This assembly having vested its executive powers in a Junta of three, which took the title of the Superior Provisional Government of the United Provinces of the River of the La Plata, in the name of Ferdinand VII., and after dissolving several assemblies, were finally abolished themselves, and a supreme director chosen, with regal powers.

The capital and provinces maintained a continual struggle, in which the former preserved the supremacy. Paraguay established an independent government, consisting of a Senate and two Consuls. The eastern shore of the La Plata, comprising the *Banda Oriental*, or Montevideo, refused its adhesion to the capital, and resisted by force of arms. They asserted an independence of Buenos Ayres as well as of Spain. The people of Peru took no active part in the revolution, from causes growing out of the organization, etc. of that province. The power of the church in Chili and its opposition to the revolution, as well as the factions between the powerful families of the Carreras and Larrains, are stated, by Mr. Poinsett, as having been unfavorable to the establishment of independence.

The South American colonies were an object of great interest with Great Britain from a very early period. Their emancipation was a favored project with Mr. Pitt, and proposals are said to have been made by him to the administration of John Adams upon the subject. The first outbreak at Caraccas was encouraged by a proclamation from Trinidad. The expedition of Miranda, and the occupation of Buenos Ayres, in 1806, by Sir Home Popham, were countenanced by the British government. Emboldened by their success, the British now determined upon the entire conquest of South America, as is evinced in the instructions given to Generals Whitlocke and Crawford, whose expedition sailed immediately after, and was repulsed, as we have seen. The expedition of General Whitlocke, says Mr. Poinsett, might have secured the emancipation of these colonies, but was not adequate to transfer the dominions to the crown of Great Britain.

After the downfall of the Spanish throne, manifestoes were published by the Princess Charlotte of Portugal, and the infant Don Pedro, claiming the Spanish American dominions. The first scheme of revolution was founded upon this pretension, and the delivery of the country to the Princess Charlotte, it was thought, would have been soon followed by its absolute independence. The matter, however, made but little progress.

We have already seen the formation of the Junta, and subsequent revolutionary governments. Years of anarchy and blood were destined to result to the almost irretrievable ruin of the colonies. The monarchial and patriot party, in their dissensions, added no little to the fearful disorders of the times. Civil wars raged between the different sections with various success and carnage. Portuguese and Spanish armies ravaged the country. Everything at times seemed hopeless for the republican cause. The Spanish yoke seemed but too likely to be imposed again. Almost any government would have been a blessing.

Remarking upon this dark chapter, Mr. Poinsett continues:—"Their dissensions and ambition render them, in the opinion of some, unworthy to be free; but let us recollect that the virtues that adorn society and brighten the page of history, are the offspring of freedom and science, and that when a people have been for centuries kept in subjection by ignorance and superstition, the first effort to burst their fetters will call into action the most violent of the human passions, and hurry men to commit the greatest excesses. The course of such a revolution will be too often stained by cruelties and crimes, and will almost inevitably terminate in a military despotism."

"In contemplating," said the Hon. Henry Clay, in his noble speech in the House of Representatives in 1818, on the appointment of a minister to the La Plata, "in contemplating the great struggle in which Spanish America is now engaged, our attention is first fixed by the immensity and character of the country which Spain seeks again to subjugate. Stretching on the Pacific Ocean from about the fortieth degree of north latitude to about the fifty-ninth degree of south latitude, and extending from the mouth of the Rio del Norte (exclusive of East Florida) around the Gulf of Mexico, and along the South Atlantic to near Cape Horn; it is about five thousand miles in length, and in some places near three thousand in breadth. Within this vast region we behold the most sublime and interesting objects of creation; the loftiest mountains, the most majestic rivers in the world; the richest mines of the precious metals, and the choicest productions of the earth. We behold there a spectacle still more interesting and sublime—the glorious spectacle of eighteen millions of people, struggling to burst their chains and to be free. When we take a little nearer and more detailed view, we perceive that nature has, as it were, ordained that this people and this country shall ultimately constitute several different nations. Leaving the United States on the north, we come to New Spain, or the vice-royalty of Mexico on the south; passing by Guatemala, we reach the vice-royalty of New Granada, the late Captain-Generalship of Venezuela and Guiana, lying on the east side of the Andes. Stepping over the Brazils we arrive at the United Provinces of La Plata, and crossing the Andes, we find Chili on their west side, and further north, the vice-royalty of Lima or Peru. Each of these several parts is sufficient in itself, in point of limits, to constitute a powerful state; and in point of population, that which has the smallest, contains enough to make it respectable. Throughout all the extent of that great portion of the world, which I have attempted thus hastily to describe, the spirit of revolt against the dominion of Spain has manifested itself. The revo-

lution has been attended with various degrees of success in the several parts of Spanish America. In some it has been already crowned, as I shall endeavour to show, with complete success; and in all, I am persuaded that independence has struck such deep root, that the power of Spain can never eradicate it. What are the causes of this great movement?"

We have frequently had occasion to advert to the absurd and cruel restrictions which are put, by the Spanish Colonial System, now greatly moderated, upon the commerce of all its dependencies. From this South America was a principal sufferer, and they have had much influence in paralyzing its industry and arresting its progress. That other causes may be assigned for the relatively-unimportant position of the republics which have been established there, and their slow advances in population and wealth, made even under a system of freedom, is not denied. With equal advantages of soil and climate, the inferiority of the Spanish and Creole character tend to place the countries inhabited and administered by them, even under the best possible systems, far, very far behind those in which the Anglo-Saxon element is allowed to operate. Industry and unlimited enterprise are the inheritance of the latter. Indolence and pride hang like an incubus upon the former. The law of one is progress, the other decay. The Anglo-Saxons have been sweeping everything before them on the North American continent, and establishing an empire which is felt, respected and feared, in every quarter of the globe. Their arts, their policy, and their institutions, find imitators where, but a few years ago, it was fashionable to revile. The old thrones of Europe are being shaken down by the young Hercules of America. It is impossible to foresee the ends which are to be ultimately worked out. Will the knowledge of power and resources be followed by their abuse? Will the love of enterprise, and the desire of more extended territory, already so plainly manifested among us, lead to excursions upon the impotent neighbors that surround us upon every hand? Have not results in Mexico taught the *invincibility* of the American arms? What power on this continent is there that can arrest their progress? What army that would not be shattered to pieces in the encounter? What state whose capital would not be occupied? We are not vaunting our prowess in haughty pride, but adducing sentiments and facts *universally* admitted. The time has even passed when Europe can interfere in the movements of the western world. The powers have enough to do in looking after each other, and preventing the overshadowing importance of any particular one. Mr. Calhoun, the other day in the Senate, scoffed, with great propriety, at the apprehension of English power being unduly exercised upon this continent again. There is no European army that could be brought to this country and landed, large enough to withstand the force that could be brought against it. It is but too evident that the destinies of America are in *our* hands. Wisdom and moderation should induce us to attend to our own peculiar affairs, and leave other American powers to do the same. The Mexican war was in many respects unfortunate, and we hail the peace with gratification. We have

territories enough to be peopled for a generation to come. We have states enough formed and in embryo to govern. Let us leave events to take their own course. The North Americans *will* spread out far beyond their present bounds. They *will* encroach again and again upon their neighbors. New territories *will* be planted, declare their independence, and be annexed! We have New Mexico and California! We *will* have Old Mexico and Cuba! The isthmus cannot arrest—nor even the Saint Lawrence!! Time has all of this in her womb. *A hundred states* will grow up where now exists but thirty. Let us not anticipate. The end of all this shall come, and God only can tell what it will be and when.

We condense the leading particulars of the trade of South America, during the colonial state, from the earliest periods.* The alcavala was the most destructive tax upon national prosperity, and amounted to four or six per cent. upon every transfer of property and every contract of sale.† The government established monopolies in certain taxed articles, extending even to the necessaries of life. The colonial trade was at first confined to particular classes in both countries, afterwards it was opened to all Spaniards, but confined to the single port of Seville, which became the emporium of American trade. In 1720 the monopoly was transferred to Cadiz. Twenty-seven vessels were annually fitted out for the supply of Peru, Chili, and Terra Firma. With other than these fleets the colonists were forbidden to trade, or with any foreigners, or with each other. No colonist could embark his goods to Spain on his own account. A board of trade regulated the periodical fleets from Spain and their cargoes. A license from it was necessary to load or land a cargo. The smallest possible amount of goods were sent to the colonies; the crown exacting the same duties as upon larger shipments, would thus find the collection of them much easier. An impost was levied upon the bulk of the articles shipped, without regard to their value. An *endulto* was levied upon every arrival of produce from America, and was fixed anew on each return of the fleets. Though Spain could not supply all the wants of her colonies, she admitted of no purchases of foreign goods by them except through Cadiz and Seville. The monopolists of these cities realized profits of 170 and 250 per cent. on the colonial trade! According to Ulloa, a pound of iron was worth one dollar in Quito, a statement we can hardly credit. Contraband traders very naturally multiplied. In 1740, other expeditions than the periodical ones were allowed to sail from the colonies, but the licenses for this trade constituted a heavy tax upon exports. In 1764 regular packet-boats were established between Corunna and the chief ports of America. Then cargoes were limited in extent, and to Spanish produce. In 1765 the trade of the windward colonies was laid open to several ports of Spain. In 1766 the cotton trade was opened to Catalonia duty free, and in

* Paper by Hon. Joel R. Poinsett; Am. State Papers, 1818.

† The alcavala, according to Adam Smith, was at first a tax of ten per cent., and afterwards of fourteen per cent. on all sales of property or goods.—*Wealth of Nations*, book v. chap. 2.

1772 to other provinces. In 1774 colonial produce, duty free, was admitted into several ports of Spain. The ordinance of 1778 abated some of the enormous duties. The supply of slaves from foreign sources was permitted, first from the French and then from the English by the treaty of Utrecht. There resulted a contraband trade in other things, however, which caused a war between Great Britain and Spain. The slave trade then passed to a private company, whose entrepot was at Porto Rico. The government took upon itself the supply, and a contract was made with a British house for 3,000 annually. In 1789 the slave trade with the colonies was thrown open to all persons whatever. In 1778 the Council of the Indies decreed free commerce, if in Spanish built and owned vessels, with all the officers and two-thirds of the crew Spaniards. The colonial ports were classed with a view to privileges. Articles of the growth and manufacture of the mother country were called free, and paid 9 per cent. duty; those of the manufacture only, paid 12½. Foreign goods, received in the colonies through Spain, paid, including all charges, in all the ports, 33½ per cent. The duties on 74,000,000 reals of imports into America in 1778 was 32,000,000 reals; on 74,000,000 exports from America, 3,000,000 reals vellon. In 1788 the exports to the colonies were 500,000,000 reals; imports from, 800,000,000 reals.

After the British invasion of South America a new era opened in the trade of Buenos Ayres. The most exaggerated notions became prevalent in England with regard to its importance. It was even thought the loss of the United States might be compensated from this quarter. On the withdrawal of the British troops, the viceroy was obliged to yield to popular clamor and open the ports to neutrals. The duties, however, were too high to attract many from the United States to enter, though British and Spanish capital availed itself of our flag. On the establishment of the Junta in Buenos Ayres, the ports of the Plate were opened to the British flag. A large capital took this direction. The market was overstocked with every article of British manufacture. Even skates and warming-pans were introduced by these sapient traders, like coals into Newcastle. The merchants often lost, not only the prime cost of the articles and freight, but had to pay a further sum for duties. English calicoes were retailed, three hundred leagues from the coast, below the London price—a state of things which has, no doubt, existed during the late Mexican war; more liberal duties and regulations, however, were the result. In 1818, Buenos Ayres continued to be overstocked with English goods. Vessels were even dispatched from the River Plate direct to China and India. "In the hands of freemen," says Mr. Poinsett, "who were sensible of its advantages, and under an enlightened government, Chili, from the number and variety of its productions, which yield the raw material of every sort of manufacture, has within itself the means of greatness. And from the number of its harbors, and great extent of coast, might carry on an extensive and lucrative commerce with the intermediate ports, with the vice-royalty of Lima, the Philippine Islands, the East Indies, and China.

The following summary, made by Gregorio Tagle, Secretary of State of La Plata, and communicated to Congress by our agent, Mr. Graham, in 1818, is worthy of introduction.

PRODUCTIONS, MANUFACTURES, &C.—REPUBLIC OF LA PLATA.

Buenos Ayres.—Grain, hides, tallow, wool, horns, hair. These are an inexhaustible supply of commercial resources. The trade with the Pampas Indians alone in montas, wool, salt, bridle reins, and feathers, exceeds the sum of $100,000 per annum.

Paraguay.—Wood of a superior quality of many varieties, mani, tobacco, guambe, peasaba for cables, honey and molasses, dried sweetmeats, sugar, rice, cotton cloths, gums, raisins, fancy birds.

Cordova.—Grains, hides, woollen and cotton cloths, mules and herds, lime, minerals of gold and silver.

Mendoza.—Dried fruits, wines, brandy, grain, cattle, woollen, wagons for transportation, minerals of gold.

Tucuman.—Woods, grain, rice, oranges, mani, tobacco, wax, cotton, cheese, woollen, herds, wagons, &c.

Salta.—Herds, mules, grain, sugar, honey, molasses, brandies, wool, woods, minerals of gold, silver, copper, iron, and tin, sulphur, alum, vitriol.

Corrientes.—Hides, hair, cotton, agi, mani, honey, dried sweetmeats, sugar, charcoal, cotton, woollen.

Entre Rios and Banda Oriental.—Ox hides, horse hides, deer skins, otter and chinchilla skins, tallow, dried and salt meat.

Mr. Poinsett thus describes the vice-royalty of Peru:

"The bay of Tumbez separates it on the north from the kingdom of Granada; the river of Loa on the south, from the desert of Alakama and the kingdom of Chili. The Cordillera of Vilacota in 14° south, separates it from Buenos Ayres. On the east it is bounded by an immense desert, and on the west by the Pacific Ocean. The face of the country is extremely unequal; bordering on the coast it is a barren, sandy desert, with a few small but fertile valleys, and in the interior are the lofty mountains and deep valleys of the Cordillera. The temperature varies therefore in the same latitude. In the habitable parts of the mountains the thermometer of Reaumer varies from 3° below 0 to 9 degrees above it. At Lima, and generally along the coast, the constant variation of the thermometer is from 13° to 23½°. The productions of Peru follow the nature of its different climates. Wine, oil, and sugar are the most valuable productions of the coast, corn and wheat of the valleys, bark and cocoa of the mountains."

The following, from the same pen, sketches Chili:

"From the Cordilleras de los Andes to the Pacific, the inclination is so great that all the rivers flow with the rapidity of torrents and are therefore not navigable. They serve to irrigate the valleys, and render them the most fertile in the world. The climate makes this method of cultivation absolutely necessary, for from the Salado to the Stata, that is, from 25° to 36° of south latitude, not a cloud is to be seen above the horizon from the month of November to the month of May. The atmosphere during this period is perfectly clear, and the dews are scarcely perceptible, nor is the heat oppressive. The proximity of the Andes tempers the air, and the mercury fluctuates between 70° and 80° of Fahrenheit and rarely rises to 85°. Thunder storms, so frequent on the east of the Andes, are unknown in this part of Chili. Winter commences in the month of May, the cold is mild, and the rains gentle and unattended with wind. The rains of the winter fertilize the hills, and the plains, which cannot be irrigated during that season, afford pasture for the cattle. The spring commences in September, and the face of nature then in Chili is peculiarly beautiful. The hills are verdant, and covered with innumerable flowering shrubs, and the plains present to the eye a carpet of flowers. The abundance of water and the peculiarity of the climate enable the inhabitants to raise all the fruits of the earth in great perfection. The wheat

which is cultivated in the valleys is of excellent quality, and the product seldom less than forty times the seed; sometimes ninety, and on the best lands even one hundred. Indian corn likewise is cultivated, and on the best lands produces abundantly. Barley is raised in great quantities for the use of horses and mules, which in the winter are fed on this grain mixed with chopped straw, as in Arabia and old Spain. Hemp and flax grow abundantly. Cotton is here and there cultivated for domestic manufactures; and there is one sugar plantation. The climate and soil are well adapted to the culture of sugar, but they have been long accustomed to get that article from Lima, in exchange for their wheat, and are not disposed to change the ancient habits. Rice would likewise grow on the low lands, but it is brought from Lima."*

Mr. Bland, one of the commissioners to South America in 1818, furnishes a picture of the vast *pampas*, or pasture grounds of Buenos Ayres:

"The pampas, which forms a part of the territory of Cordova and of Santa Fe, and all that of Buenos Ayres, if measured entire into the country of the Patagonian tribes, extends in length 1500 miles, and in breadth in a direct line, following the southern boundary of the Union, 500 miles, from the ocean to its western confines. Over all this immense space there is not a tree, not a shrub, nor a single perennial plant to be seen, save only those few which here and there lift their heads near a herdsman's hut. There are no hills nor eminences, and the undulations are so gentle, as only to be perceived by taking a long view over its surface; and then the eye passes round and round the horizon as over the face of the undulating ocean in a calm, where there is not a single object to delight or to relieve, or to vary the scene. The keen blast called the pamperos, sweep over the houseless and unsheltered plain without the least obstruction, and the fierce rays of the sun are felt in all their unmitigated fervor. You are sometimes in sight of thousands of animals, but they are chiefly horned cattle and horses, and deer, ostriches, wild dogs, &c. fly as you approach. For awhile the pampas presents the mind with an agreeable astonishment, but that soon subsides, and the eye may often be directed in vain in any way to obtain a single glance of society. Surrounded by a boundless, silent sameness, one sensibly feels the value of the voice and variegated scenes of nature. This interminable plain spreads out one of the most expanded and awful solitudes on earth."

These general observations and reflections must, however, be brought to a close, as there will be scarcely sufficient space otherwise for the particular enumeration and description of states intended in this article. We therefore proceed at once to this, the second part of our labors.

POPULATION AND AREA OF AMERICAN STATES IN 1838.

	Sq. Miles.	Population.	Whites.	Indians & Col'd.	Slaves.
Araucania,	28,000	450,000	.....	.....	.....
Argentine Republic,	1,060,000	1,000,000	.....	.....	.....
Bolivia,	313,000	1,200,000	300,000	900,000	.....
Brazil,	2,740,000	6,060,000	843,000	3,130,000	2,086,666
Chili,	101,000	602,000	130,000	472,000	.....
Colombia,	.....	.....	.....	.....	.....
Ecuador,	.....	550,000	.....	.....	.....
Granada,	.....	1,686,000	.....	.....	.....
Venezuela,	.....	829,000	.....	.....	.....
Paraguay,	146,555	600,000	60,000	540,000	.....
North Peru, / South Peru,	954,000	831,000 / 494,000	136,311	729,315	284,773
Uruguay,	223,978	175,000	20,000	155,000	.....
Patagonia,	441,309	150,000	.....	150,000	.....

ARAUCANIA is an unimportant territory north of Patagonia, and included within it on the maps. The inhabitants are ignorant, and

* Am. State Papers, 1818.

are chiefly limited agriculturists and shepherds. There is much curious interest connected with the history of this people.

ARGENTINE REPUBLIC, or BUENOS AYRES. It formerly included Monte Video and Paraguay, as we have seen. Cattle and agricultural products form the chief source of wealth; wool is also exported, of superior growth. The Argentine Republic is broken up into a number of minor republics, associated together; and Paraguay and Uruguay, or Monte Video, are but nominally included. These states have set up a separate government. The minor republics or provinces are Entre Rios, Santa Fé, Corrientes, Missiones, Bajada de Santa Fé, Cordova, San Luis de la Punta, Mendoza, San Juan, Rioja, Catamarcha, Santiago, Tucuman, Salta. *Buenos Ayres*, the capital, has a population of 80,000, almost entirely of the Spanish race. Its trade is very considerable. The government consists of an Executive, elected for five years, with his appointed council, and a Junta, elected every year. Rosas entirely subverted this constitution, and established a military despotism. The internal trade and navigation is considerable.

In 1828 sixty-four British ships, of 12,746 tonnage, entered Buenos Ayres. In 1836 the whole number of arrivals were 213, of which 37 were from the United States; tonnage 36,117; value of cargoes 39,422,134 current dollars. The number of ships departing were 224—40 to the United States; value of cargoes 29,967,611 current dollars. Contraband trade has been extensively conducted in consequence of the disorders in the republic.

EXPORTS—BUENOS AYRES, 1843.

		Value—piastres.	Value—francs.
Hides	1,459,992	65,000,000	21,024,000
" salted	518,381	26,955,000	8,626,000
" of horses	50,238	1,105,000	354,000
Skins, sheep, doz	94 921	2,848,000	911,000
" goat	39,695	1,191,000	381,000
" calf	6,236	187,000	60,000
" otter, lbs	312,612	1,094,000	350,000
" deer, doz	4,658	56,000	18,000
Horse Hair, arrobas	109,433	4,380,000	1,402,000
Wool	468,790	10,313,000	3,300,000
Tallow	390,216	9,755,000	3,122,000
Ostrich Feathers, lbs	15,500	233,000	75,000
Salt Meat, quintals	162,184	5,676,000	1,816,000
Leather Shavings	9,556	239,000	76 000
Candles, cases	2,394	96,000	31,000
Horns	1,035,325	312,000	100,000
Bones	1,462,500	241,000	77,000
Total Exports, in piastres			130,381,000
" " ● Francs, at the rate of 32 cts. per pias.,			41,723,000
" Value, £ sterling			1,649,200
Or about			$8,000,000

BOLIVIA, or Upper Peru. More than three-fourths of the inhabitants are aboriginal Indians. The chief manufactures are of cotton, woollens of the hair of the alpaca and llamas, glass, silver vessels, fans, &c. Commerce is inconsiderable, growing out of difficulties

of transportation. Nearly all the products of Bolivia go to Europe, from the Pacific, after a terrible and rocky land-carriage of a considerable distance. Nothing but the precious metals and the most valued goods can endure the cost. Previous to 1829, Bolivia was included with Buenos Ayres. The independence of the country was then secured under Gen. Sucre. Its present name was taken from the liberator, Bolivia, who drew up its constitution. This constitution and code have been abandoned, though the government is still vested in a president, senate, tribunes and censors.

The vast empire of BRAZIL compares with China and Russia in extent; having an Atlantic coast of 4000 miles, and an area of nearly three millions of square miles. The climate is of consequence very various, though in general mild and regular. Mr. Von Langsdorff, consul at Rio, remarks: "Winter, in this country, resembles summer in the North of Europe. Summer appears one continuous spring, while spring and autumn are unconsciously lost in winter and summer."

> "Stern winter smiles on this auspicious clime,
> The fields are florid in eternal prime;
> From the bleak pole no winds inclement blow,
> Mould the round hail or flake the fleecy snow;
> But from the breezy deep the groves inhale
> The fragrant murmurs of the *eastern* gale."

All the trees and products of the West Indies abound in Brazil. In the southern provinces, the grains and fruits of Europe succeed. The finest and most valuable woods abound. Scarcely a two hundredth part of Brazil is in cultivation. "The luxuriance and richness of this vegetable world, is ascribed, by Humboldt, to the great moisture which everywhere prevails, and which gives it an advantage over all other hot countries; forming a more happy and fertile contrast to those parts of Africa which lie within the same parallels of latitude. In many respects the climate, the soil, the varied surface, and the rich vegetation, seem to resemble more some parts of Asia Minor. But in that exuberance of ever-green foliage, which forms the peculiar characteristic of a new continent; in the number of its richly wooded mountains; the sources of countless springs, and the abundance of large streams; in the character, even, of its sandless deserts and indomitable forests, the tropical regions of Brazil are almost pre-eminent to those of any other region."*

Vast quantities of cattle are reared in Brazil, several thousands being common on a single estate.

The mines of Brazil are most prolific of iron, gold and diamonds. The largest diamond in the world was found here. In the search for them, the earth is carefully washed after being taken from the beds of the rivers. The operation is performed by negroes, who receive their liberty when fortunate enough to find a valuable gem. 30,000 negroes have been so employed, and the mines are worked by government. The whole value of diamonds found in the eighty years, ending 1816, was not supposed greater than three and a half millions

* McGregor on America, p. 1332.

sterling, little greater than the sugar and coffee export of a single year! After Mexico and Peru, says McCulloch, Brazil has furnished Europe with the greatest quantity of precious metals. The rage for mining has, however, abated, and the people have betaken themselves to the more rational and profitable pursuits of agriculture. There is a large iron foundry belonging to government, which was considered in 1843 a failure.

The population of Brazil are free and slave; the former including Europeans, white persons born in Brazil, mulattoes, aborigines, Africans, &c. There are 88 titles of nobility, viz.: marquises, viscounts, counts and barons. The whole population, in 1844, was 4,450,249, a very inconsiderable number for so vast an empire. McCulloch makes the estimate about 7,000,000. One-half, nearly, are negro slaves, and one-sixth only of Portuguese blood. Mr. Kidder, who lately visited Brazil, says, "the Catholic religion and the priesthood are falling into decay."

Brazil was discovered by the Spaniards, in 1500, and soon afterwards by the Portuguese, which gave rise to serious disputes. The Dutch, French and English plundered the earliest settlements. The Dutch held possession of different positions till 1654, when they were expelled. In 1808, the Portuguese sovereign removed his court to Brazil, and threw open the ports to all friendly and neutral powers. A revolution having taken place in Pernambuco, the Portuguese constitution was adopted to arrest its progress. On the king's leaving for Portugal, a struggle ensued, which resulted in the establishment of the *independent* Empire of Brazil, under the son of the Portuguese king, in whose family it still remains.

The cities of Brazil are upon the coast, the harbors fine, and rivers extensive. The Amazon is one of the wonders of the world. It was discovered by Orellana, who, in a frail craft, descended it from the mountains of Peru to the mouth. His description, published in Europe, was exaggerated and embellished in the highest degree, and gave rise to the *El Dorado*. A race of giant female warriors were described, which gave name to the river. These accounts were for a long time credited.

"Considering, says a historian, the lengthened period during which Brazil has been colonized, its vast extent and fertility, the variety of its productions and its favorable situation for commerce, its progress in the accumulation of population and wealth has been extremely slow. This apparent anomaly may, however, be easily explained. The slow progress of Brazil, like that of the contiguous *ci devant* Spanish colonies, is entirely owing to the vicious principles on which it was governed by the mother country, and to the rigid exclusion of foreigners from the country; the oppressive restrictions laid on the trade and industry of the colonists, and more than all the rest, to the ignorance of the Portuguese, and their inferiority in respect of science and art to most other nations of Europe. Portugal could bequeath nothing to her colonies but pride, superstition, and intolerance; but since the downfall of the old colonial system, consequent on the emigration of the court to Brazil, the foundations of a new and better order of things have been laid; *novus sæclorum nascitur ordo.* The settlement of thousands of foreigners in Brazil, and the unfettered intercourse she now carries on with all the most civilized countries in the world, have already had the best effects; and though it will require a lengthened period to counteract the joint influence of ignorance, slavery and a debasing superstition, Brazil is rapidly rising, not merely in the scale of wealth and population, but also in that of civilization."

We proceed to notice the most important cities and trade of Brazil.

Para is situated on one of the mouths of the Amazon, called Para River, 80 miles from the sea. The regular ebb and flow of the tides of the sea are observed for six hundred miles above the mouth of the Amazon. The position of Para is admirable for commerce. Its highways and by-ways are all by water, on bays, rivers, lakes and creeks. Manufactured goods, silks, hardware, wines, spirits, porter, salt provisions, salt, flour, furniture, oil, gunpowder, iron in bars, lead, cordage, and sail-cloth, are imported to the amount of half a million of dollars. The export, in 1845, reached £147,505 sterling, embracing cotton, rice, rum, India rubber, cacao, cloves, coffee, gums, drugs, cabinet woods, etc. etc. The manufactures are cotton sacks and India rubber shoes.

Maranham is a town of 30,000 inhabitants, and exhibits a general neatness and air of enterprise, said to be uncommon in the other towns of the empire. The imports in 1841 were £359,526, exports £319,833.

Parahiba exported in 1844, 2,134 tons of sugar, valued at £33,493 sterling; 23,172 bags of cotton, valued at £80,765 sterling; 20,583 hides, £9,005 sterling.

Pernambuco imports cotton goods from the United States; codfish, tea, earthenware, hats, flour, iron, etc., from England, France, and Germany.

EXPORTS PRODUCE FROM PERNAMBUCO—1828–1845.

	Cotton.	Sugar.				Hides.
	Bags.	Cases.	Boxes.	Barrels.	Bags.	W't.—arrob.	No.
1828	70,785	22,870	2,073	31,078	6,771	1,460,628	52,444
1829	54,820	21,984	4,973	28 973	8.222	1,463.332	46,573
1830	61,151	25,335	3,743	38,576	13,849	1,705.614	65,489
1831	53,157	27,970	1,402	42,466	8,429	1,799,986	76,584
1832	31,520	21,708	3,895	42,555	3,640	1,518,300	66,656
1833	58,564	15,507	3,432	54,477	5,444	1,301,612	84,743
1834	42,799	12,148	1,262	27,110	1,143	854,088	86,350
1835	52,142	17,520	2,846	56,996	9,180	1,383,888	91,492
1836	62,832	21,317	4,163	65,337	31,399	1,828,392	90,701
1837	43,847	17,774	1,603	57,346	19,248	1,456,420	93,771
1838	60,648	20,806	1,929	68,812	29,927	1,750,380	105,851
1839	39,173	20,891	3,739	78,800	27,923	1,878,675	111,052
1840	35,854	24,946	3,110	86,247	42,168	2,191,093	132,993
1841	26,990	23,650	2,149	90,256	66.296	2,261 699	136,494
1842	21,357	20,123	1,361	78.739	54,390	1,906,936	125,296
1843	35,906	23,161	1,392	60,613	73,204	2,017,522	104,420
1844	41,385	21,388	772	75,105	96,890	2,146.688	124,074
1845	26,562	19,571	849	61,892	216,015	2,565,824	163,935

Bahia has a population, it is estimated, of 180,000. It was formerly the principal rendezvous of the slave traders.

EXPORTS AND IMPORTS—BAHIA, 1843.

England	francs	15,367,047	6,740,242
Hanse Towns		1,547,732	3,334,472
Portugal		2,253,513	1,888,917
Austria		553,384	2,654,002
France		2,342,336	851,859
Africa		262,956	1,455,743
Sweden and Norway		109,763	1,550,751
Sardinia		586,884	991,926
United States		750,353	54,637
Sicily		226,302	439,877
Denmark		—	411,562
Other Countries		342,410	456,536
Fishers		404,832	—
Total	francs	24,687,512	20,130,524

Rio de Janeiro.—"This port," says McGregor, "is much resorted to by vessels in distress, navigating the ocean between the capes of Good Hope and Horn. Ships of war and merchant vessels, bound round the capes, find this a most convenient place to procure water and fresh provisions. Ships from Europe and North America meet in this great conveying harbor: ships sailing to or arriving from Bombay, Canton, New Holland, New South Wales, Valparaiso, and the various islands of the Pacific, as well as California and Oregon, on the western coast of North America.

"Rio Janeiro has become the chief emporium of Brazilian commerce, and especially of its mining districts. All the ports on the coast south of Bahia, and it may be said, to the frontiers of the Banda Oriental, to Monte Video, send most of their produce for exportation to Europe or for home consumption to Rio Janeiro. Farinha, beans, bacon, dried or salt meat, are brought to the metropolis; hides, horns, dried meat, tallow and bacon, with rice and wheat flour, come by sea, chiefly from the provinces of Rio Grande do Sul and San Paulo; the latter furnishes also cheese, the bark of the mangrove tree for tanning, with some gum woods, sugar, and rum; Santa Catherina sends also sole leather, onions, garlic, dried fish, and pottery. The small harbors to the north of Rio de Janeiro, to wit, Joân do Paraiba, San Salvador, Macahe, Porto Saguro, Caravelhas, Victoria, &c., supply vegetables and fish, beans, planks, hoops, Brazil wood, bark, charcoal, fuel, cocoa-nuts, tobacco, sugar, rum, rice, &c.

"The inland trade is extensive between Rio de Janeiro and the neighboring provinces. From Rio Grande do Sul and San Paulo, many thousands of oxen, horses and mules, are annually driven to Rio de Janeiro. The inhabitants of the remote provinces of Matto-Grosso and Goyaz bring gold in bars and dust, precious stones and smuggled diamonds, (the latter being contraband,) to exchange for European manufactures; to the smaller ports of Brazil, Rio exports all sorts of European goods; to both the western and eastern coasts of America, English and Portuguese goods; to Europe, sugar, coffee, cotton, tobacco, hides, otter skins, horse hair, &c.; and in

speaking of trade, we must not omit the abhorred traffic in human beings, which disgraces Rio Janeiro."

IMPORTS AND EXPORTS—RIO JANEIRO, 1842-43.

Imports.	Milreis.*
Great Britain	13,697,638
United States	4,028,471
France	3,985,972
Portugal	1,912,077
Uruguay	1,552,640
Argentine Republic	932,092
Hanse Towns	1,430,875
Spain	618,249
Brazil	1,062,205
Other places	2,045,460
Total	31,265,679

* The milreis is worth about 50 cents.

Exports.	Milreis.
Great Britain	3,920,629
United States	6,005,131
France	1,118,036
Portugal	1,205,100
Uruguay	655,242
Argentine Republic	704,206
Belgium	928,471
Hanse Towns	3,360,956
Austrian Ports	2,050,075
Denmark	544,920
Sweden	469,097
Genoa	389,963
Holland	34,923
Uncertain	834,190
Total	22,220,309

CHILI.—Chili stretches in a long, narrow strip upon the Pacific shore of South America. Its rivers have but moderate capacities for navigation. Its agriculture is but slightly attended to. Cattle-raising is a common pursuit. On the coast the fisheries might be prosecuted with great success. The number of copper mines is large, and there are a few of gold and silver. The manufactures are few, and of the coarser kind. Since its separation from Spain the commerce of Chili has increased, which cannot be said of other South American states. The increase has been very great. The trade is chiefly with Great Britain; and exports of foreign goods are made from Chili to other states of South America. The imports from the United States are tobacco, candles, oil, sugar, manufactures; those from Peru, dyes, coffee, sugar, pearls, cacao, tobacco, cotton, rice, salt, and spirits; from La Plata, Paraguay tea, cotton, &c. Exports—bullion, copper, hides, tallow, pulse, wheat, fruits, drugs, and European goods re-exported. Chili is a republic, under a president elected for a term of years. It has a congress of 56 members. The revolution commenced in 1810. It was kept under by the royalists from 1817 to 1818; but in that year secured its independence. The chief commercial town is *Valparaiso*.

Capt. Wilkes, of the United States' Exploring Expedition, writes: "I have had some opportunity of knowing Valparaiso, and contrasting its present state with that of 1821 or 1822. It was then a mere village, composed, with but few exceptions, of straggling ranchos. It has now the appearance of a thickly-settled town, with a population of 30,000, five times the number it had then. Most of the buildings are of one story, and built of sun-dried brick. Santiago contains 60,000 inhabitants, and is increasing in wealth and population."

In 1842, there arrived in Valparaiso 375 vessels, of 101,075 tonnage; 10,000 of these tons were from Great Britain, 7,000 from the United States, and 28,000 from Peru. The departures were 311

vessels of 82,390 tonnage, of which 15,000 were to England, 31,000 to Peru, 10,000 to Brazil, and only 2,000 to the United States. The average annual export of Chilian products, from 1836 to 1840, has been stated at £1,139,913.

TRADE, UNITED STATES AND CHILI—1844.

Exports to Chili.		*Imports from Chili.*	
Fish, Oil, and Sperm Candles	$6,953	Bullion and Specie	$185,117
Staves, Shingles, Planks	7,535	Copper, pigs, bar, &c.	355,842
Masts, Spars, Naval Stores	2,122	Dye-Woods	3,445
Provisions, Beer and Spirits	63,489	Leghorn, Straw, &c., Hats	18,333
Breadstuffs	28,462	Wool	19,847
Tobacco	6,411	Cocoa	26,431
Wax	9,258	Hemp	2,234
Sugar	22,550	Manufactures	9,470
Manufactures	703,951	Sundries	127,951
Sundries	5,914	Salt	600
Exports of Foreign Goods	248,576		
Total	$1,105,221	Total	$750,370

COLOMBIA.—This territory in the most northern limit of South America, included in one union the states of Venezuela and New Granada in 1819. The revolutionists, under Sucre and Bolivar, having everywhere succeeded, Ecuador in 1823 was added. Venezuela separated from the other states in 1829, but rejoined them the following year. This union has, however, been broken up, and the states constitute separate and independent governments, which shall be considered in their order.

NEW GRANADA is in the north-west of South America, and includes the Isthmus of Panama. The inhabitants are descendants of Spaniards, Negroes, Mulattoes, Indians, &c., and amounted, at the latest computation, to 1,360,000. Coarse woollens and cottons are manufactured for the consumption of the lower classes. Gold is found in the beds of rivers and in mines; platinum exists on the Pacific shores. The other minerals, of silver, iron, copper, tin, and lead, are not plentiful. Emeralds are abundant in a river north of Bogota; coal occurs on the banks of the Rio Sinu. The average annual value of the trade of Granada is estimated at 40,000,000 francs. The imports in 1840 scarcely exceeded 17,000,000 francs; in 1843 they rose to 23,000,000 francs; in 1844 they fell to 22,000,000 francs. In 1843 the exports were 16,000,000 francs; in 1844, 14,000,000 francs. The contraband trade is very large; the trade is divided in the proportions of

Jamaica and England,	13,000,000	francs.
France,	3,769,000	"
United States,	1,000,000	"
Island of Curacao,	820,000	"
Spain,	610,000	"
Venezuela and Peru, each,	750,000	"

The imports from the United States are flour, salt goods, drugs, &c. The port of Carthagena on the coast is one of the finest harbors in the world. The port of Panama conducts chiefly a coasting trade.

A line of steam-ships carry the English mail from Chagres to Valparaiso. The West India steamers leave the mail at the isthmus to to be carried across to that point.

VENEZUELA.—"The Republic of Venezuela is a vast, fertile and splendid region; magnificent rivers, fertile forests, high mountains, low alluvial districts, and islands, and plains, are its remarkable features. Its name is derived from a fancied resemblance to Venice in the first Indian villages discovered. The republic is divided into thirteen provinces, of which Caraccas is the most important. The provinces have their governors, and send each two members to the senate. The government and laws are lodged in a President, Vice President, Senate, House of Representatives, &c. Caraccas has a population of 50,000. Its port is La Guayra. The inhabitants of the towns and villages of Venezuela are chiefly farmers. The people and government have acted, it is said, since their independence, with more wisdom than any of the Spanish republics, except Chili. The Orinoco River is 1600 miles long, and receives innumerable tributaries. It is navigable for large vessels five hundred miles—it has several mouths. The regions drained by this river are in wilderness. A steam navigation of its waters would work miracles in a short time. Many movements have of late been made to bring about such a result, with which the reader is doubtless familiar."

EXPORTS OF VENEZUELA—1845.

Great Britain and British Colonies	$ 1,156,751
United States	1,376,596
Denmark and Colonies	441,336
Germany, Bremen, and Hamburg	701,685
Spain and Colonies	1,012,747
France and French West Indies	477,494
Holland and Curacoa	268,135
Mexico	84,554
Granada and Goajiara	6,000
Hayti	540
Sardinia	43,557
Austria	22,000
Other Countries	764,000
Total	$ 5,592,159
Or in £ sterling	894,745

The imports in the same time, including coin, from all countries, were $4,961,727, or in £ 793,877.

PARAGUAY, though nominally included in the Argentine Confederation, has scarcely ever joined the association. It was early under the government of the Jesuits, and on the war occurring between Spain and Portugal, the Indians took sides against the latter. The suppression of the Jesuits in France, and Spain, and Portugal, was followed by their banishment from America. The productions of Paraguay are numerous. Quantities of timber are floated down to Buenos Ayres. Tobacco, sugar and cotton, are exported; caoutchouc and indigo grow wild; Paraguay tea has been exported to the amount of 8,000,000 lbs. The state of cultivation is superior to that of the neighboring Argentine states. Mr. Robinson saw whitewashed cottages among the trees, surrounded by fields of cotton,

yucca, and tobacco, Indian corn, sugar cane, &c. The dictator possessed nearly half the country, in consequence of Jesuit confiscations. It is administered for the state, and agricultural improvements are extended by despotic regulations. Rice, maize, cotton, culinary vegetables are grown, and the breeding of horses and cattle promoted. The Paraguay tea is said to be as much used in Chili, La Plata, Peru, Brazil, as China tea in England. Mr. Macgregor remarks, if the war between Buenos Ayres and Monte Video were ended—if these countries were tranquilized, the period will have arrived when a very lucrative trade may be carried on with the fertile region of Paraguay, and the countries drained by the Parana and its affluents. The government of Paraguay is an anomaly in the present times, says McCulloch; it approaches as near an absolute despotism as can well be conceived; the dictatorship of Sylla, in ancient Rome, being the only model with which it may be compared. The second consul, Dr. Francia, had himself declared, in 1817, dictator for life. Under his government the country exhibited great industrial improvement.

Ecuador, since the dissolution of the Colombian union, has formed an independent republic, governed by a president chosen for eight years, and a legislature of two houses. "In the western region of Ecuador, Indian corn, plantains, yams, cacao, tobacco, sugar, cotton, and different kinds of tropical fruits and vegetables are cultivated." From the elevated plains and valleys of the mountain region, wheat is sent down to Guayaquil and other low districts. Towards the southern extremity of the Andes, there are extensive forests. The great plains yield wax, gum, resin, and sarsaparilla. In the mountain region, cattle in large herds, horses, mules, and sheep, are pastured. Turtles are abundant in the Amazon; the *manta* fish abounds on the Pacific coast, and is salted for the Guayaquil market. Pearls were formerly fished; cochineal is collected near Loxa; small quantities of gold, silver, lead, and quicksilver are found. Salt is made on the coast. The manufactures of Ecuador are more important than those of any other of the South American republics; coarse woollen and cotton stuffs are woven at many places in the elevated valleys. There are manufactures of silk, and some tanneries. The city of Guayaquil contains 25,000 inhabitants. It supplies the settlements of the mountain coast with wine, brandy, and the sugars of Peru and Chili, and with European merchandize.*

EXPORTS, GUAYAQUIL—1843-44.

1843	Cocoa,	15,338,970	lbs.	Value,	£ 170,433
1844	"	8,565,500	"	"	105,788
1843	Cotton,	80,000	"	"	1,920
1844	"	256,000	"	"	4,618

Peru.—The constitution of the present government of Peru was framed in 1828, upon the basis of that of the United States. The senate and chamber of deputies are chosen by the people; as also is the president every four years. The Span-

* Macgregor, 1091—We have adopted his language.

ish system, which limited supply, forced the inhabitants of Peru to make some indispensable articles. Coarse cotton and woollen stuffs are manufactured. At Lima, arequipa, cuzco, gold and silver vessels, utensils, trinkets, and ornaments are made. The internal trade is impeded from the want of roads. A trade in gums, cotton, resin, wax, sarsaparilla and coarse cottons, called Tucuya, are exported from the eastern districts to those of Brazil, near the Amazon. The maritime commerce of Peru is chiefly with the western coasts and other republics of America, with Mexico, Central America, Guayaquil and Chili; to which countries, sugar, wine, brandy, salt, and other articles are exported. Gold, silver and saltpetre are also exported. The sugar mills, in the Valley of Huanuco, are made of wood and worked by oxen. On the larger estates, brass rollers are used, but with a single exception, the estate of Andaguaylla, the proprietors adhere to the old practice of working by oxen by day and by night, throughout the year. All accounts agree upon the degeneracy of Peru since its independence. The population has decreased vastly. Von Tschudi, quoted by McGregor, gives a frightful account of prevailing immorality. He says, "the number of new-born infants exposed and found dead, is very great. When a dead child is picked up before the church, or in the street, it is carried without a word of inquiry to the Pantheon. Frequently it is thought not worth while to bury it. Vultures drag about the sweltering carcasses of infants, and devour them in the populous streets." The silver mines of Pasco are the richest in South America. There exist quicksilver mines at Huancabelica. Gold-dust and fragments are found in several rivers. Copper, iron, lead and sulphur exist.

Lima is the chief city of Peru, and is elevated 560 feet above the level of the sea. The houses are low, in order to stand the effects of earthquakes. Population, 45,000. Its trade is conducted through the adjacent port of Callao. Capt. Wilkes, of the United States' Exploring Expedition, who visited Lima in 1821 and 1841, marks the change: "Everything betokens poverty and decay; a sad change from its former splendor and wealth. The country has been a scene of commotion and revolution for the last 25 years. The neglected walls and ruined tenements, the want of stir and life among the people, are sad evidences of decay."

Callao, according to Capt. Wilkes, has improved. The streets have been made much wider, and the town has a more decent appearance. Water is conducted from the canal to the mole, and a railway takes the goods to the fortress, which is now converted into a depot. The best idea of the trade of Callao may be formed from the number of vessels that frequent it. The usual number in port is about 40, in the proportion of 9 ships of war and 35 merchantmen.

The progress of Peru has been greatly retarded by its vicious administration of government. Monopolies of every kind have been established. A monopoly of navigating the coasts and ports of Peru in steam vessels has been granted for ten years to Mr. Wheelwright.

EXPORTS, PERU—1839, 1840.

	1839.	1840.		1839.	1840.
Bark	$50,327	117,999	Saltpetre	$299,152	454,712
Bullion, &c.	6,554,141	7,810,746	Sugar	52,150	—
Chinchilla	11,016	9,643	Tin	61,367	64,943
Copper, &c.	91,089	105,210	Wool—vicuna	752	910
" in bars	14,637	21,318	" sheep's	252,032	295,208
Cotton	371,800	429,444	" alpaca	397,650	412,500
Hides	6,859	19,090			
Horns	320	—	Total Exports, 1839		$8,164,349
Seal Skins	556	—	" " 1840		9,741,733

IMPORTS INTO PERU—1840.

From France	$1,450,000
" Great Britain	6,150,000
" United States	1,400,000
" Canton and Manilla	300,000
" Germany	300,000
" Spain and Cuba	300,000
" Italy	200,000
Total	$10,100,000

URUGUAY, or Monte Video, has an undulating and fertile soil, with a temperate climate. The rains fall almost entirely during the winter months. Pasturage, rather than cultivation, characterizes the lands. The exports are hides, skins, hair, horns and jerked beef. The city of *Monte Video* contains 20,000 inhabitants. The chief trade of Monte Video is with Europe and Havana. In consequence of the siege and blockade of the town, no exports were made in 1844, &c.

IMPORTS OF MONTE VIDEO—1835.

	Dollars Currency.
From England	993,954
" France	351,602
" Buenos Ayres	275,935
" Brazil	706,428
" United States	333,811
" Bremen	17,402
" Hamburg	33,472
" Mediterranean	352,245
" Portugal	12,720
" Chili	14,702
" Spain	3,127
	$3,095,398

PATAGONIA and the adjacent islands are in the extreme south of South America. The Indians are tall and bulky, averaging, it is said, six feet, though very exaggerated notions of these tall savages were once circulated and believed. They live under petty chiefs, who are possessed of but little authority. The Spaniards settled, in 1779, Port St. Julian, but speedily abandoned it. The coasts are not often visited by other than whaling ships. Little in this barbarous and almost unexplored country can be worthy of mention.

We have thus taken a survey of all the various divisions of South America in a manner much more hurried and imperfect than we at first anticipated. Scarcely more than a bird's eye view has been presented.

We must apologize to the reader, by pleading the haste of the printers, in getting out the present number of the Review. Whilst writing this sheet, the previous one is in the compositors' hands, a thing very common in our editorial experience. To Mr. McGregor we make all acknowledgments for the assistance derived from his valuable work.

Art. II.—THE SUGAR CANE.*

MC CULLOH'S REPORT ON SUGAR TO THE UNITED STATES GOVERNMENT, REVIEWED.

New-Orleans, June 1, 1843.

Prof. J. D. B. De Bow:

In the March number of your Review, (page 249,) one of our sugar planters, who is also an able refiner, has stated some incorrect facts, in the report of Professor McCulloh, made relative to the sugar culture in Louisiana. Yet Mr. V. Aime, the author of these remarks, has only touched the part which has some reference to the improved apparatus, and to the ameliorations which have been introduced in the manufacture of sugar, for some years past. His long experience, his practical knowledge on this subject, have certainly given him the right to correct the errors of the learned Professor McCulloh, who, in my opinion, has not always done justice to the Louisiana planters, in neglecting to notice the efforts which they have never ceased to make, in order to ameliorate this important branch of industry, notwithstanding the immense difficulties which surround it.

It is impossible not to approve the excellent critical remarks which Mr. Valcour Aime has made, and for my own part, I think them perfectly just. Like him, I have had opportunities of examining, at different times, the finest sugar works in Cuba, and I did not find that they have made greater progress there in this branch of industry than in Louisiana. But if we agree on this point, as we do on many others, there is, nevertheless, one point on which we entertain a slight difference of opinion. In commencing his remarks, Mr. V. Aime declares that the report of Professor McCulloh "*is the work not only of a man of science, but of a conscientious one, who has represented things as faithfully as he could, and without any kind of deception.*"

I am willing to admit, with Mr. V. Aime, all the high qualities which distinguish the author of the report; I do not deny him any. But, sir, are all these high qualities sufficient to render the chemical part of the professor's work exempt from faults? Assuredly not. I will now endeavor to show you, that with science, and the best faith in the world, it is possible to commit gross mistakes.

In my opinion, the work of Professor McCulloh is essentially de-

* It is but fair to the author to remark, that his criticism was originally written in he French language, and translated in our office into English.—[Ed.

fective. The scientific or chemical part is radically and insufferably bad. This is the point of difference between Mr. V. Aime and myself. In his excellent remarks, Mr. V. Aime has shown you that the purely practical part of this work contains nothing new; that it is of little value; that, on the contrary, it contains a great many errors, and has proved it to you. I will proceed to show you that the scientific part is worth still less than the practical.

Since the appearance of this report, many of the New-Orleans journals have analyzed and lauded it, in terms more or less extravagant, according to their inspirations or tastes. There are, perhaps, circumstances in which the puff is permitted, or at least tolerated. But when the subject treated of is of such importance as that of the sugar culture in Louisiana, it seems to me it is highly culpable to bestow such extravagant praise on a work like Professor McCulloh's. As a serious work, this report is undeserving any eulogy. Truly, the critic, in reviewing it, has little or nothing to do.

The mission of Professor McCulloh was one of high interest. I believe you will agree with me upon that point. His report having been made public, every one has a right to praise or criticise it as he pleases. The opinions which I am about to express, are entirely disinterested. Relying on those pompous eulogies, which I had seen in a daily journal, I hastened to procure a copy of this report. I commenced its perusal with attention, in order to discover the *interesting chemical researches* which I expected to find; because, I confess, I am naturally curious about these sorts of novelties. I had believed that a work of the kind could only be undertaken by an able man, by a skilful chemist, and one who was also well-versed in the practice of making sugars.

I will not undertake to make a formal and regular criticism of this work; the task would be long. I might tire your readers, and it would be painful for me—I say *painful*, for I confess that I always experience a sort of unpleasantness in exposing the errors made by an author, especially when they are so great as those made by Professor McCulloh. You will look in vain for a single paragraph in the chemical part of the report which does not present an open flank for the attack of the critic. I appeal, sir, to all persons who have the slightest knowledge of chemistry. I will not, however, take advantage of the unfavorable position in which the author has placed himself. I will confine myself simply to the most glaring errors.

The process followed with a little too much confidence by the professor, in the experiment on molasses and raw sugar, has been tried in France long ago. The principal fault of this method is, that it is only applicable to the simple cases of a dissolution of *pure sugar* in water. If the liquid sugar to be examined contain foreign substances in solution, matters gummy, mucous, lactose, glucous, glutinous sacchamates, in general, the hydrate of carbon and other substances badly defined, mineral and organic salts, they act in the same manner as crystallizable sugar, and lead the operator into error. In acting upon a solution of pure sugar, the mistakes are

not less than from two to three per cent; but in acting upon molasses, they become monstrous! I will return again to this subject.

In estimating the quality of foreign molasses arriving in the northern ports, the professor has made serious mistakes; but, with the assistance of his favorite algebraic formula, and some logarithms, he arranges all that in the most elegant manner in the world; he extricates himself from this false position like a skilful man; to embellish his errors, he adorns them in a mathematical form! To say the least, it seems to me ridiculous to apply a learned algebraic formula to an experiment on molasses. We ought to have recourse to these means only, when acting upon bodies perfectly well defined, admitted by all the chemists, and of which the elementary composition is known. Otherwise, I repeat it, we are subject to fall into serious mistakes.

Molasses is, by itself, a very complex liquid, the intimate constitution and composition of which, the professor seems to be entirely ignorant of; while his plan, aided by his formula, makes him commit errors from 10 to 12 per cent. in the appreciation of its richness in sugar, and that, without his being aware of it. Is the professor ignorant that, independently of organic matters, molasses from Cuba and other sugar-producing countries, where the cane attains a complete maturity, contain from 15 to 20 parts in the thousand of saline matters—salt of potash, salt of lime, of magnesia, hydrated silica, and that these matters can vary strangely in their proportions, according to the localities where the cane is cultivated? In this letter I propose to prove to you, that the molasses proceeding from raw sugar of Louisiana contains the matters which I have named, in proportions two or three times more considerable!

The appreciation of the real worth of the deposits or sediments, which we find in hogsheads of foreign molasses arriving in the ports of the northern states, that is to say, the appreciation of the quantity of crystallizable sugar which the deposits contain, is entirely erroneous in the report of the professor. The deposits are often as rich as certain raw sugars, and almost as easy to work by the refiner.

At page 25 of his report, Professor McCulloh has given us a series of experiments or speculations, which he has made to ascertain in what manner the juice of the cane of Tahiti acts with some re-agent which he has employed for this purpose, (it would be the same with the juice of all other varieties of cane,) but it would be difficult to explain with what view he has done it, and wherefore. Since in the *expose* of his researches, he does not at all consider the signs which the re-agent has furnished. If he had analyzed the precipitates, he would doubtless have discovered the presence of phosphates of lime and magnesia in the juice of the cane; hence, he would have been led to find the salts of potash and hydrated silica—the organic matters; all that would have followed, of course.

The experiment which he reports, (page 26,) upon the precipitate occasioned by the acetate of lead, is exceedingly curious. The professor tells us, that after letting it remain 12 hours upon the filter, his cane juice had become so clammy and slimy, that not a drop

passed through the filter. His filter had become impermeable, and he seemed astonished at it!

The professor, then, does not know that in warm climates the juice of the cane becomes deteriorated after some hours of extraction; and that at the end of twelve hours, his juice, the juice upon which he makes his *chemical investigations*, had entirely passed into a state of viscous fermentation!

At page 26, paragraphs 6, 7, 8, and 9, of his report, Professor McCulloh exposes the comparative experiments made upon three varieties of cane, with a view of ascertaining the quantity of juice which they contain per cent. Let him speak for himself:

COMPARATIVE EXPERIMENTS ON THE YIELD IN JUICE OF THREE VARIETIES OF THE CANE.

(6.)—"I weighed, and accurately, 21.111 ounces of ribbon cane, which was then rolled in a handmill, consisting of a pair of small rolls, similar to those used for rolling metals, or to the large rolls of the ordinary sugar-mill. For the use of this apparatus, I was indebted to Mr. Duggan, of the Saratoga Estate, who had caused it to be constructed for similar experimental purposes. The above mentioned quantity of cane thus yielded 12.542 ounces of juice of the specific gravity 1.035, corresponding to 10° Baume of the cross instrument I employed, but to 11° Baume as indicated by the glass pese-sirop belonging to Mr. Duggan. The wet begasse obtained at the same time weighed 8.007 ounces.

"The sum of the weights of the juice and the begasse being only 20.549 ounces, it follows that 0.562 is the weight of juice lost and retained upon the surface of the mill. This loss I considered so great that I was induced to repeat the experiment, with, if possible, greater care, and with the following results: 19.483 of ribbon cane yielded 11.024 ounces of juice, and 7.886 ounces of moist begatta; the quantity of juice retained by the mill, or lost, being 0.573 ounces. Hence we have the comparative results:

	1st Experiment.	2nd Experiment.
Moist begatta	37.92	40.51
Juice obtained	59.40	56.58
Juice lost	2.68	2.91
Ribbon cane	100.00	100.00

(7.)—"After drying for forty-eight hours by exposure to air and sun, the 8.007 ounces of moist begatta, of the first experiment, weighed only 3.422 ounces, and had therefore lost 4.585 of water by evaporation. Likewise, the 7.886 ounces of begatta of the second experiment, similarly dried, weighed 3.510 ounces, and had therefore lost by evaporation 4.376 ounces of water; if this water be supposed to be united with one-fourth of its own weight of sugar, a supposition which differs probably little from the truth. Then 5.731 would be the amount of juice retained by the 8.007 ounces of moist begatta in the first experiment, and 5.470 ounces would be the corresponding amount of juice retained by the moist begassa of the second experiment. Hence it would follow, that the ribbon cane experimented upon consists of:

	1st Experiment.	2nd Experiment.
Woody fibre	11.00	12.40
Saccharine juice	89.00	87.60
		100.00

"Of the 88 per cent. of juice thus shown to exist in this ribbon cane, 62 per cent. only were expressed; and the begatta of cane ground in large mills probably *retains* a similar proportion.

(8.)—"From 15.072 of Creole or crystalline cane, rolled in the same manner as the above, 9.399 ounces of juice of the specific gravity of 1.079, or 9°5 Baume, were obtained, and also 5,365 of moist begatta; 0.308 ounces of juice being left on the surface of the rolls. By drying for forty-eight hours in the air and sun, the

5.365 ounces of moist begatta lost 2.666 ounces of water; and supposing this water to have existed in that begatta as saccharine juice, containing about one-fifth of sugar, we have, as the yield by rolling and the composition of this cane, the two following respective results:

Juice expressed	64.40	Juice obtained	86 50
Moist begatta	35.60	Dry woody fibre	13.50
	100.00		100.00

Hence we find that only about three-fourths of the juice contained in this cane was expressed by the process employed.

(9.)—"By similar treatment, 10.3855 ounces of Otaheite cane yielded 6.502 ounces of juice of lighter color, apparently clearer than that obtained from either of the other varieties of cane, and of the specific gravity of 1.0875, or 10° 5 Baumé; also, 3.652 ounces of moist begatta. It had, therefore, left on the surface of the rolls of the mill, 0.3215 ounces of juice. After drying the begassa for two days in the sun, it weighed 1.9202 ounces, and had, therefore, suffered a loss of 1.7318 ounces of evaporated water. Hence, I deduce as above the results:

Juice expressed	64.83	Juice contained	85.67
Moist begassa	35.17	Woody fibre	14.33
	100.00		100.00

"The begassa, therefore, retained 20.84 per cent. of the 85.67 per cent. of juice which this cane contained.

"The crystalline cane employed in the preceding experiments was *plant cane*, while the ribbon and Otaheite were *rattoons*; hence the great difference of density in the juice obtained from the former. A perfectly fair comparison of the three varieties could only be made by using plant canes or rattoons for each; but these experiments serve to show, also, that juice from plant cane is of inferior richness to that from rattoons. In other respects, the canes were similar, and the comparison exact; for they had all grown in the same field, and were of the same age."

All this is very clear, and no person, however simple, can be deceived. Let us examine carefully these four paragraphs, and catch the professor in his own net.

After having passed the ribbon cane into a little hand-mill, the professor found that the juice expressed had a density of 1.085, corresponding, said he, to 10° of the *pese-sirop* of Baumé. The instrument which he used was of copper; but this same juice, marked 11° of Baumé, was, however, by the *pese-sirop* in glass belonging to Mr. Duggan. What can we think of that?

First, we see here two instruments in conflict, one says 10 and the other 11. Which of the two is right?

Well, if the density of this juice was of 1.085, as Professor McCulloh affirms, they were both false. After this, what confidence can we place in an experimentalist who has not even proved his saccharometer?—who, before making his experiments, has not assured himself that it was exact?

Had the juice upon which the professor made his experiments a density of 1.085? or did it weigh 10° in the *pese-sirop* of Baumé? or did it mark 11° in this same instrument? ***Fiat lux!*** For us, we will tell him that 1.085 density corresponds exactly to 11½° of the *pese-sirop* of Baumé, which makes a pretty considerable difference in its richness in sugar. We will show him this further on.

Juice of this density, in ordinary circumstances, contains per cent. in weight:

Juice	89.00
Woody fibre	11.00
	100.00

It is twelve years since I established these proportions.

(§ 8.)—The Creole or crystalline cane (cane of Malabar) was pressed in the same little mill; its juice had a density of 1.079; it marked 9°5 of Baumé according to Professor McCulloh. We still find the professor at fault. 1.079 density corresponds to 10¼° of the *pese-sirop* of Baumé.

Under the most ordinary circumstances, this cane contains per cent:

Juice	91.00
Woody fibre	9.00
	100.00

The error made by Professor McCulloh is 3½ per cent. Since, according to him, this cane contains:

Juice	86.50
Woody fibre	13.50
	100.00

Let us pass to his third experiment.

(§ 9.)—The cane of Tahiti was submitted to the same treatment as the two preceding varieties. The juice obtained had a density equal to 1.0875, or, according to Professor McCulloh and his instrument, it marked 10°5 of Baumé. The same error is again made here; 1 0875 density equals 11¾° of Baumé.

Cane juice of this quality is composed of:

Crystallizable sugar	20.92
Salts and organic matters	40
Water	78.68
	100.00

According to Professor McCulloh, this cane contains per cent:

Juice	85.67
Woody fibre	14.33!
	100.00.

Errors increase in magnitude as we advance. According to the experiments made by me and those made by Mr. Peligot of Paris, this cane contains per cent. in weight:

Juice	90.00
Woody fibre	10.00
	100.00

The error committed here by the professor is 4.33 per cent. This is not a laughing matter; but I would observe, that it is not possible to push negligence further.

The professor does not tell us if he has passed the canes in any mills of the Island of Cuba, in order to ascertain the quantity of juice which these mills can express of a given weight of canes; this was

nevertheless of great importance. At page 46, paragraph 14, he tells us *that he believes* that we obtain about 60 of juice for 100 of cane. But he does not speak positively. Nevertheless, if the experiments made by the Professor of Chemistry at the University of Havana are correct, the planters of Cuba are far from obtaining this result. I will give you the experiments of Professor Casaseca on this subject:

RIBBON CANES.

100 ribbon canes, passed in a water-mill upon the *ingenio Alexandrio*, belonging to Count O'Reilly, have given:

Juice	45!
Begasse	55

CREOLE, OR MALABAR CANE.

100 Creole canes, passed in a mill moved by steam upon the *ingenio Economica*, belonging to Don Pedro Diago, have given:

Juice	35!!!
Begasse	65
	100

CANE OF TAHITI.

100 canes of Tahiti, passed in a mill moved by oxen upon the *ingenio Coca*, belonging to Don Ambrosio Romero, have given:

Juice	56
Begasse	44
	100

TAHITI CANE.

100 canes of Tahiti, passed in a water-mill upon the *ingenio Rolanda*, belonging to Don Lorenzo Montalvo, have given:

Juice	57
Begasse	43
	100

If this is the progress that the planters of Cuba have made in the sugar business, but especially in the extraction of juice, as Professor McCulloh tells us, we can show him that the Louisiana planters are not behind him on this point. We have the advantage of knowing Professor Casaseca; we know also the plantations upon which these experiments were made. I will by and by explain to you how Professor Casaseca fell into mistakes in making the above experiments.

PRODUCE OF THE CANE-JUICE BY THE AID OF CYLINDER PRESSES MOVED BY STEAM IN LOUISIANA.

The five following experiments were made upon five varieties of canes, with a horizontal mill, moved by a steam machine from West Point, of 16 horse power—a first-rate mill.

The mill was left in the same condition as when it performed its daily work; the weighed canes were placed upon the *porteuse* in the same manner and of the same thickness as this last was accustomed to be used. The five experiments were made upon the plantation of of Mr. V. B. Marmillion, the 25th November, 1842.

I report with confidence these five experiments, because they were made with the greatest care.

1st—Ribbon or Java Cane.....1000 lbs.
Juice expressed..... 631
Begasse..... 369 that is, 63 per cent.
1000

The density of this juice was 1.059.7—it marked $8\frac{1}{4}°$ by the pese-sirop of Baumé.

2d—Violet Canes of Java.....1000 lbs.
Juice expressed..... 360
Begasse..... 370
1000 63 per cent.

The density of this juice was 1.061.5—it marked $8\frac{1}{2}$ of Baumé.

3d—Grey Canes.....1000 lbs.

This variety of canes is found mixed with the ribbon canes upon all the plantations, but it constitutes a distinct variety.

Juice expressed..... 640 lbs.
Begasse..... 360
1000 64 per cent.

The density of this juice was 1,056—it marked $7\frac{3}{4}°$ of pese-sirop of Baumé.

4th—Otaheite canes.....1000 lbs.
Juice expressed..... 658
Begasse..... 342 66 per 100.
1000

The specific gravity of this juice was 1,0615—it marked $8\frac{1}{2}$ Baumé.

5th—Malabar, or Creole canes.....1000 lbs.
Juice expressed.....677
Begasse.....323 very near 68 per 100.
1000

The specific gravity of this juice was 1.065—it reached 90 with the *pese-sirop* of Baumé.

These two last varieties of canes are less hard to express than the three preceding, which are always more ligneous.

You thus see that you can obtain in Louisiana from 64 to 65 per cent. of cane-juice with a sixteen horse power engine. I could mention other experiments made for the same purpose in other mills, which experiments have clearly demonstrated that a large number of planters in Louisiana obtain from 63 to 64 per cent. of juice. But, sir, if you think that I consider this result as the perfection of labor, you deceive yourself. No, the planters can exceed even this; they can easily obtain on an average, and without trouble, from 72 to 75 per cent. of cane-juice.*

* It was after many years of enormous loss of juice, occasioned by a bad system of expression, that I proposed, six or seven years ago, this second mill. Good advice is not always followed. I invite those planters who are still in doubt to consult on this subject Mr. Lapice, in the parish of St. James.

In making the above mentioned experiments, there are certain indispensable conditions to be observed. You can extract with the same mill without interfering with it in any way, sometimes 55, sometimes 60, and sometimes 65 per cent. of cane-juice, and sometimes more than this. This depends on the quantity of canes which you bring under the cylinders at the same time, and persons unaccustomed to this species of experiment are very apt to fall into error.

Another condition, and by no means a less important one, is that the cylinders of the mill make no more than four revolutions a minute. To a mill which is not very tight, if you convey but a small quantity of cane at a time, these canes will not be well pressed, especially if they happen to be hard. A trial of this kind will not give an exact idea of the quantities of juice susceptible of being extracted out of a hundred canes by this mill. The sugar planter who consumes daily a large quantity of cane-juice, ought not to tighten his mill; but if he wishes to have a good pressure, he must load very heavily the *porteuse*. The canes arriving "*en masse*," press one another, and the result is the same when the mill is very tight, but with the difference, that by this means and by a single pressure you obtain a large quantity of cane-juice which is impossible when the mill is very tight. In both cases the pressure may be equally good; and a mill disposed of as above mentioned, which can give easily, in twenty-four hours of labor 30,000 gallons of juice, the cane being well pressed—(64 per cent.) would not yield one half of the quantity if it was very tight, and the pressure would not be superior.

There is at this time on the plantation of V. B. Marmillion, in the parish of St. John the Baptist, a mill from the foundry of Niles, of Cincinnati, which can yield 2,000 gallons of juice an hour; making 48,000 gallons in twenty-four hours, and that, too, without any extraordinary exertion. With this mill Mr. Marmillion obtains from 64 to 65 of cane-juice by one single pressure. In the West Indies, where the juice marks on an average 11° Baumé *pese-sirop*, a mill of this force could very easily furnish cane-juice in a sufficient quantity to make 5,000 lbs. of sugar in its raw state, and completely drained. I saw at the residence of Don Justo Contero's plantation, Trinidad de Cuba, a mill worked by a twenty horse-power engine, which yielded 48,000 gallons of cane-juice in twenty-four hours; and there are in Louisiana a great number of mills of that power.

In paragraph 11, page 28 of his report, Professor McCulloh gives us a specimen of his *modus operandi* to ascertain the proportion of crystallizable sugar contained in cane-juice of whatever quality. We will lay before you the exposition of his method in his own words.

ANALYSIS OF OTAHEITE CANE JUICE.

(§ 11.)—"Five ounces of fresh cane juice just from the mill, of the specific gravity 9° Baumé, were weighed exactly, and to this one ounce of a solution of sub-acetate of lead was added, which caused an abundant precipitate to be formed. After standing one hour to settle, the clear liquid was decanted carefully, and alcohol poured upon the precipitate, that it might be filtered. The filtration was performed readily, and the filtered alcoholic liquid was of a beautiful transparent yellowish green color, indicating that the alcohol had dissolved some coloring

matter. With iodide of potassium the filtered liquid gave an abundant precipitate of iodide of lead, showing the sub-acetate of lead had been used in excess. The washed precipitate, dried over a lamp on wire gauze, was found to weigh 0.049 ounce; and when incinerated in a porcelain crucible, it yielded 0.0206 ounce of protoxide of lead. Hence, five ounces of this cane juice, give, with sub-acetate of lead, a precipitate containing 0.0284 ounce of extractive matter, which amounts to 0.568 ounce in 100, or rather more than half of one per cent.

(§ 12.)—"Of the same cane juice, specific gravity 1.0843, one hundred volumes were mixed with three volumes of a solution of sub-acetate of lead, and the mixture was then filtered; (dans quelles proportions était sous acétate de plomb?) after filtration, the liquid remained of an olive tint, and sub-acetate of lead gave with it a slight mucilaginous precipitate, which floated instead of subsiding, showing the saturation incomplete. Neither iodide of potassium nor sulphuric acid could detect in it a trace of lead. Filtered through fine bone black, with which it had previously been gently heated, it became colorless, and sufficiently transparent for optical examination, to which it was then subjected with the following results:

(*Comment le sous-acetate de plomb a t-il agi sur sou jus de canne? Le Professeur se garde bien de nous l'expliquer*)

$d = 1.075$; $t = 27.6\ c$
$a = 29°$; $e = 0.97$
$a'' = -9°\ 5$; $n = 0.9$

Hence,

Log. a....	1.46240	Log. $(1 -\vert- r'')$	0.13481
Log. n...	$\bar{1}$.95424	Log. a'	1.41664
Log. a'...	1.41664	Log. $(1 -\vert- r')$ a. c.	$\bar{1}$.86012
Log. a'...	0.97772	Log. S.....	1.41157
Log. r''...	$\bar{1}$.56108		

$$x = \frac{S}{132.79\ d}$$

Hence,

Log. (132.79).....	2.12316
Log. a.....	0.03141
	2.15457
Log. S.....	1.41157
Log. x.....	$\bar{1}$.25700

"Therefore, $x = 0.1807$, and hence this cane juice contains 18.07 per cent. of crystallizable sugar.

We may therefore regard the juice examined as composed of:

Water,.....	81.36
Crystallizable Sugar,.....	18.07
Extractive Matter,.....	0.57
	100.00

"The preceding calculations, in which the Log. a' exceeds slightly Log. S, would indicate a trace of some other light polarizing substance besides cane sugar; but, as these numbers differ only in the third place of decimals, the variation is within the limits of errors of observation. With Trommer's copper test I obtained only the blue color for cane sugar, and no reduced oxide of copper. Hence, I conclude, that ripe cane juice, when fresh, contains only crystallizable sugar.

(§ 13.)—"To confirm the above results of optical analysis, I placed in a porcelain crucible, weighing 0.572 ounce, a portion of the same cane juice, which weighed, together with the crucible, 1.56725 oz., hence 0.99525 was the weight of the juice. This juice was then gently evaporated over a spirit lamp to a thick sirup, after which it was placed in the oven used for drying the clayed sugar, and allowed to remain there twenty-four hours, when it was taken out and found to be quite solid and dry. To expel any remaining moisture, I again heated it gently over a spirit-lamp, and then weighed it; the weight of the crucible and its contents was 0.75816 ounce, and therefore, 0.99525 ounces of juice yielded 0.18616 of dry solid matter. Hence, we have as the composition of this cane juice:

Water,	81.3
Solid Matter,	18.7
	100.0

a result which agrees perfectly with that obtained optically, and which this experiment was designed to test, by a ruder but less abstract method; but which result differs somewhat from that obtained by M. M. Peligot and Casaseca, who give 79 per cent. of water and 21 per cent. of sugar as the composition of Otaheite and creole cane juice."

Otaheite cane-juice, subjected to the above mentioned experiment, marked 9° Baumé; its specific gravity 1.0843! And this the professor himself tells us! There is, beyond all doubt, a gross error here, which engenders many others. At § 6, page 26, the professor informs us that a quantity of cane-juice, of the specific gravity 1.085, corresponded to 10° Baumé of the instrument *he employed*, but to 11° Baumé as indicated by another instrument. On this occasion he tells us that cane-juice, of specific gravity 1.0843, marked 9° Baumé *pese-sirop*. What is the meaning of all this disorder—of all these contradictions?

Cane-juice of 9° Baumé *pese-sirop*, corresponds to a specific gravity of 1.065—a similar juice contains 16 per cent. of crystallizable sugar.

Cane-juice, of the specific gravity 1.0843, corresponds to 11½° Baumé *pese-sirop!* A similar juice contains 20 per cent. of crystallizable sugar, all saline and organic matters being deducted; and you will perceive that by his analytic process, Mr. McCulloh only makes out 18.07. The error is gross.

Professor McCulloh considers the juice submitted to this examination as being composed of

Water	81.36
Crystallizable sugar	18.07
Extractive matter?	0.57
	100.00

What is this *extractive* matter? Where are the sulphs. of potassium, of lime, of magnesia, etc? I will state hereafter.

Where are the organic matters—albumen, *pectine* and others, which he mentioned before? Did these matters have no existence in the cane-juice which he examined by the new method? What ought we to think of such an analysis? Of what use is this long string of logarithms, of the optical examination, and the re-agent of Trommer, if we are led into error—if this method is infinitely more defective than the old one? For all the chemists in the world have confidence in the latter.

This method (that is, the one *used* by Professor McCulloh, for it is not his own) is remarkable for its elegant and seducing simplicity. This cannot be denied; and persons having only a superficial knowledge of mathematics, and who are ignorant of chemistry, will readily yield to its influence, because they see an algebraic formula applied to a chemical analysis. But we must beware, and fortify ourselves against all this species of seduction.

The other analyses of Professor McCulloh are all of the same description.

22. In order to separate the foreign matters, the professor pours a solution of acetate of lead in his cane-juice with the intention of separating the *extractive matter* from it, because he firmly believes that his only concern is *extractive matter* and a *solution of sugar* in the water. The acetate of lead, according to his idea, combines with the *extractive matter*, and has no action on the sugar. The whole is thrown on the filter; he collects the precipitate, washes and dries it. *Heaven knows* in what manner he performs this operation. After this he finds that his precipitate weighs 0.049 ounces; he incinerates it in a porcelain crucible, and discovers that the residue weighs 0.0206 ounces, and that it is *only protoxide of lead!* The *extractive matter* has disappeared. He does not mention whether he deducted the weight of the ashes proceeding from the filter. But independently of the organic matters, the professor did not perceive that his precipitate contained phosphate of lead, sulphate of lead, chloride of lead, oxide of iron, manganese, *silica*, etc. All these come under the denomination of *extractive matter!* Another objection presents itself. The professor was not aware, as I had occasion to remark, that his cane-juice—that cane-juice on which he operated, contained phosphate of lime, phosphate of magnesia, sulphate of potassium, and chloride of potassium; and the result was, that the acetate of lead which he added to it decomposed those several and different salts, and replaced them by acetate of lime, acetate of magnesia, and acetate of potassium, which salts remained in solution in the filtered cane-juice, which he says contained nothing but sugar! But it is evident that the above salts formed a constituent part of his sugar! And after a series of most laborious calculations, overloaded with logarithms, he arrives at the conclusion, that a juice of the specific gravity of 1.0843, contains 18.07 per cent. of crystallizable sugar!

I shall now proceed to lay before you the old method, which I use myself, to ascertain the richness of cane juice or of any sweet liquid whatever, and also to ascertain the specific gravity of any other bodies, whether liquid or solid.

In order to ascertain the richness of a sirup or of any saccharine liquid, it is necessary in the first place to determine its specific gravity. This must be taken exactly, and as much as possible between 4 and 5° of the centigrade thermometer. If the atmospheric temperature was of 15, 20, 25° or more, this difference must be corrected by calculation, or the temperature of the liquid must be reduced artificially to 4° centigrade, or 40° Fahrenheit.

For example, in a solution of pure sugar of the specific gravity of 1.061.5, or of 1.061 grammes to the *litre*, I begin first by ascertaining the quantity of cubic centimetres of sugar contained in this liquid, and I represent this quantity by x.

The specific gravity or density of pure sugar = 1.606; that is, a cubic decimetre of sugar, supposed to be pure and without interstices, weighs 1.606 grammes; an equal volume of water weighs 1000 grammes at 4° centigrade.

From these data, I establish the following equation:

$$x = \frac{1.0615 - 1000 \times 1000}{1.606 - 1000} = \frac{61.500}{606}$$

$\frac{61.500}{606}$ = 101.4 cubic centimetres of sugar, what will the 1000 cubic centimetres of tried liquid?

Composition in volume of 1000 cubic centimetres of a solution of sugar at 1.061.5 grammes:

Sugar,	=			101.4 cubic centimetres,
Water,	=	1000	— 101.4 =	898.6
				1000.0

Composition as regards weight of this same *litre*, of a solution of

Sugar at	1.061.5 grammes,			
Water	= 898.6 cubic centimetres	=	898.6 grammes,	
Sugar	= 1.061.5 — 898.6	=	162.9	
			1.061.5 grammes,	

that is the weight of the litre of the solution of sugar.

This saccharine liquid contains per hundred, in weight—

Sugar	15.350
Water	84 650
	100.000

By acting on a solution of pure sugar at any specific gravity, and in following, step by step, the above method, you succeed in finding the per centage of the sugar with the most rigorous exactness.

In making the application of this formula to a sirup made of any cane-juice whatever, and to ascertain the quantity of sugar it contains, either the weight or the volume given, it is necessary to deduct the weight of the saline and organic matters contained in this sirup, which matters vary in proportion to the quality and the nature of the cane-juice employed. This experience alone can teach.

If I apply this formula to a cane-juice of good quality marking 8½ Baumé *pese-sels*, of specific gravity 1.0615 (Louisiana cane-juice,) I find that the matters in solution giving the specific gravity to this juice exists there in the proportion of 15.35 per cent.

On the other hand, knowing by analysis that the proportion of saline inorganic matters is of 6.75 per cent. in a juice of the same specific gravity, by the difference I establish the composition of this juice:

Crystallizable sugar	14.63	
Salts and organic matters	67	
		15.35
Water		84.65
		100.00

At page 28, § 11 of his report, Professor McCulloh informs us that a juice of the specific gravity of 1.0843 determined by his method, contained per 100 in weight:

Water	81.36
Crystallizable sugar	18.07
Extractive matter?	0.57
	100.00

23. In applying the method just described to this juice, of the specific gravity of 1.0843, and which is beyond all doubt more exact than that used by the professor, we find it to contain:

Water	79.396
Crystallizable sugar	20.179
Saline and organic matters	425
	100.000

The error in this instance is more than $\frac{2}{20}$ in the richness in sugar; and to make similar mistakes it is not necessary to be a chemist. Another specimen of the manner of arriving at a chemical analysis by Professor McCulloh.

Let us permit him again to explain his method in his own language, page 36, paragraph 31.

ANALYSIS OF SOME OF THE FECULENCIES CONTAINED IN OTAHEITE CANE-JUICE.

(31.)—"For the purpose of ascertaining what is the nature of the greater part of the feculencies contained in cane-juice, and which separate by gentle heat alone, I took a portion of the same from the clarifier, heated to 140° Fahrenheit, and subjected it to analysis, with the following results:

"The feculencies, as taken from the pan, were partially dried by exposure to the air, but they were so retentive of moisture that I found it impracticable to dry them thoroughly without heat, which would probably change the combinations of their elements, and was therefore avoided; and when mixed with water, they formed a mucilaginous mass which could not be filtered. A portion of the still moist feculencies being then carefully weighed, was thoroughly washed with alcohol of the strength of 95 per cent., and the mixture subjected to filtration on a counterpoised filter. The solid matter in the filter was gently and freely washed with fresh alcohol, after which is formed a perfectly dry mass, and was equal in quantity to 11.04 per cent. of the original matter treated with alcohol. By evaporation of this alcohol it yielded 1.64 parts of cerosie, and a small portion of an essential oil; it had therefore taken up 87.32 parts of water. Hence, the scum examined is composed of 87.32 per cent. of water, and 12.68 per cent. of dry matter. From these results, united with those of an analysis of the portion insoluble in strong alcohol, I obtained, as the composition of the 12.68 per cent. of dry matter in feculencies, which separate from Otaheite cane-juice by heat alone—

1.—Woody fibre,	70 5
2.—Albumen,	14 0

How strange! how did the professor perceive that this was albumen only?

3.—Cerosie,	12.9

Cerosie being entirely insoluble in alcohol, the professor has mistaken chlorophylle for cerosie!!!

4.—Silica,	1 3
5.—Phosphate of Lime,	1 1

There was also phosphate of magnesia with the phosphate of lime! but this the professor did not see.

6.—Oxide of Iron, ...0.2

Oxide of manganese was also mixed with the oxide of iron—but the professor was equally blind.

7.—Essential Oil,.....a trace.

100 0

It is less than nothing—it requires extraordinary vision to perceive it.

This is what is called *bácler*, a chemical analysis.

The oxide of iron spoken of by the professor in this case, does not issue from the cylinders of the mill as he supposes. The iron in the state of combination has its existence in the bark of the cane, and even in the juice of all the varieties of cane. How could he arrive at a correct idea of the constitution of the feculencies of cane-juice, when he asserts that he collected them before the ebullition of the juice? At that time he had only a part of the feculencies, and it is with this portion of them that he gives us a specimen of what he denominates an analysis!!!

Furthermore, how could the professor expect to find alkaline salts in these feculencies, since the cane-juice, however rich it may be, is always acid, and owes this peculiar acid quality to the presence of the phosphate of lime.

In the examination which he made of three varieties of cane-juice, in the island of Cuba, the professor passes over in silence the saline matters which exist in the juice of all canes, in greater or less proportions, according to the climate where they are cultivated, and at all the periods of their growth. In the cane, the formation of the salts always precedes the formation of the sugar. The cane-juice which he examined in Cuba, contained from 3 to 4 parts in the thousand of these saline matters; that is, consisting of salt of lime, salts of potassium, of magnesia, &c. How does it happen that they escaped his observation? If Professor McCulloh will take the trouble of making *chemical investigations* on the cane of Louisiana, he will meet with these saline matters in a much greater proportion than in the cane of the West Indies; for this reason, the riper the cane is, the less it contains of these matters. If he wishes to try the cane at all, the joints, in November, for instance, the period or time of grinding, he will find that the juice of the top of the cane contains these saline matters in a proportion of 3 and 4 times greater than the juice taken at the bottom; and that the juice taken from the middle of the cane will yield a very nearly average contents of saline and organic matters.

Allow me, sir, to give you, in a few words, an idea of the proportion of saline matters which are found naturally in the cane-juice.

I remarked, and in this opinion a great number of planters coincide, that the specific gravity of cane-juice in Louisiana is on an average of 1061.5; that is, that this juice corresponds to 8½, or thereabouts, *Baumé pese-sels*—it is oftener less. I therefore consider 8½ as a fair average.

A gallon of cane-juice, of this specific gravity, coming from the mill,

Contains about	17 grammes,	28 cent. of saline matters.
Organic matters	7 "	87
Together	25 grammes,	15 cent.

1000 gallons of this same juice, of the specific gravity of 1061.5, contains,

Saline matters	17 kilog,	283	grammes.
Organic matters	7	870	"
Total	25 kilogs.	153	gr. or 55½ lbs. A. W.

In the cane-juice of a high degree, namely, of a specific gravity of 1073 to 1090, (cane-juice of the West Indies,) the saline matters, as well as the organic matters, are in a much inferior proportion.

By the use of lime-milk in the defecation of the sugar, nearly one-third of the foreign matters are separated; all the other saline matters are concentrated in the sirup; they are met with again in the molasses and in the raw material.

A portion of the acid phosphate of lime, the phosphate of magnesia, the hydrated silica, a portion of the soluble organic matters, are removed by the defecation through the milk of lime; all these matters, in a great measure, ascend with the green feculencies. After having been purified by this milk of lime, 1000 gallons of this same juice retains:

Divers salts	14 kilogs.	758	grammes.
Organic matters	3 "	164	"
Total	17 kilogs.	922	grammes = 39½ lbs.

These 39½ lbs. of organic and saline matters, necessarily are found in the *cuite*. If the defecation was perfect—if the acid phosphate of lime, the phosphate of magnesia, the hydrated silica, the organic matters, could be completely removed by the milk of lime, there would remain about 12 kilogs. = 26½ of salts of potassium and other matters, in 1000 gallons of cane-juice of the specific gravity of 1061.5, after complete defecation. But it is not possible to introduce the quantity of lime-milk sufficient for the complete defecation, without serious injury to the fabrication, and to the quality of the article; of this, every sugar planter is perfectly aware.

If the sugar planter always obtains molasses, *and in large quantities*, he must attribute this to the presence of the saline matters. I say this, for the most part, the poorer his cane-juice is, the more molasses he collects: because, cane-juice of a poor quality contains a greater proportion of saline matter than a juice of a greater specific gravity. There are, however, some rare exceptions, to which it is useless to allude. The vacuum apparatus, and the new methods which have been carried to the greatest perfection, are not competent to obtain all the crystallized sugar.

If the cane-juice did not contain saline matters, it would be easy to crystallize *all the sugar it contained*; especially by operating *in vacuo*, and in filtering bone black, because the cane-juice, (juice coming from a ripe cane,) contains crystallizable sugar only.

The saline matters, especially the salts of potassium of lime, are always an insuperable obstacle to the total production of the sugar contained in the cane-juice. These matters are not only prejudicial to the crystallization, but they react on the crystallized raw material, and cause a portion to deliquesce during the draining. It is only by liquoring or by *terrage* you can separate these matters from the sugar. If I were called upon, I could demonstrate, that the sugar (raw material) of Louisiana, contains on an average about one half pound of saline matters per gallon; that the whole quantity of molasses furnished by the draining of one hogshead of raw sugar, contains very often from 25 to 30 pounds of those matters; and that the *raw sugar* is always impregnated with the same matters. In unfavorable seasons, when the cane-juice marks 7° or 7½°, this proportion is increased. I have seen, on several occasions, that the *cuite* required to fill a hogshead, which, with complete draining, will weigh 1000 pounds, contained more than 70 pounds of saline matter. This depends on the quantity of cane-juice employed to attain 1000 pounds of raw sugar. Two-thirds of these saline matters run out with the molasses, the other portion remains in the raw sugar, and tends incessantly to drain the sugar, or to cause it to deliquate.

The facts which I have placed before you, have not yet been understood by all the planters. When they do understand them perfectly, the state, or rather the planters in a body, can offer a reward of $100,000 to the person who will devise means for the total removal of these matters, previous to the crystallization of sugar; then, and then only, will there be no molasses.

It will be not only one of the most magnificent discoveries made in chemistry, but one of the most useful; the services rendered to the planters would be incalculable, and could not be too highly recompensed.

To execute this work, and to render it tolerable, the march of the professor was traced out. It is unfortunate for himself, and a matter of regret for the persons interested in this subject, that he did not follow the beaten track, without engrafting any of his own notions and ideas. He had at hand all the discoveries and investigations made on this subject for the last twelve years. From these sources, he could have collected materials which would have enabled him to have written a tolerable book, and one which would have answered the purposes of the American government; at all events, his report would have been less defective.

In 1842, Admiral Dupersé, at that time Minister of the Navy and of the Colonies, entrusted to a chemist a similar work. The French chemist, although a man of distinction in his profession, did not fulfil his mandate to the general satisfaction. But, at least, he gave undeniable proofs of his extensive knowledge of chemistry;—his report containing new ideas and ingenious facts. For these, you would look in vain in the work of the American chemist. This proves to us clearly, that works undertaken by order of government—works ordinarily well paid, are not always the best executed.

Professor McCulloh is, nevertheless, a great partisan of *new and improved apparatus*, especially those of Billieux and Derosne. In his report, he cites their plans with great warmth. The sugar planters who may have entertained a slight desire of using the one or the other, will find a most captivating tableau—an infallible way of making a rapid fortune. According to Professor McCulloh, the advantages offered by the usage of these apparatus, are so mighty and important, that every planter who has the slightest trace of common sense, must renounce at once the use of *sugar frying-pans ! !*

Those, however, who on this subject are sceptical, must beware of taking any rapid step; for, in my opinion, it has never been *clearly demonstrated*, that the manufacture of *white sugar* was more profitable and more advantageous to the planter, than the manufacture of the *raw material.* Experience alone can teach us this; and since this question has never been solved, let us remain in *statu quo.* If the information which has reached me on different occasions is correct, those who have inconsiderately abandoned the old process, and adopted these wonderful apparatus, often regret their change; or, according to the *picturesque* expression of the enthusiast, their "*sugar* frying-pans."

From page 59 to 64, Mr. McCulloh exposes his own ideas on the defecation of the cane-juice; the paragraphs 31 to 37 are very explicit on this subject. But they clearly demonstrate that the theory of defecation by the use of lime, or by a milk of lime, is as yet unknown to him, since he is unable to explain the action which this *alcoli* exercises on the cane-juice, and on the matters contained in the juice. This, according to his ideas, amounts next to clarification.

In an article inserted in your Commercial Review, vol. 2, page 335, in the year 1846, written by a distinguished lawyer of New-Orleans, we find an explanation similar to that of Professor McCulloh; but the author not being a chemist, it was not at all astonishing he did not understand, and could not explain, the action of the lime in this operation. Errors and faults so glaring are willingly overlooked in this case, but they cannot be tolerated in a Professor of Chemistry.

Ribbon cane-juice, on leaving the mill, contains:

1. Water.
2. Sugar.
3. Acid, Phosphate of Lime.
4. Phosphate of Magnesia.
5. Sulphate of Potasse.
6. Chloride of Potasse.
7. Hydratide of Silica.
8. Saline combinations of Iron and Manganese. (These last in very weak proportions.)
9. Organic Salts of Potasse.
10. Albumen.
11. Caseine.
12. Gluten.
13. Matter having an analogy with Hydrate of Carbon.
14. Chlorophylle, united to a weak portion of unctuous matter.
15. Ceroise.
16. Cellulose, or remains of fibrous matters.
17. Carbonic Acid.

I have found in certain cane-juice, in 10 litres, (2 galls. 642,) at times, 8, 9, 10, 12, 15, and 20, up to 30 grammes of phosphate acid of lime and magnesia.

All these matters may vary considerably in their proportions, according to the density of the juice of the cane, and according to the height

at which the juice is taken in the same cane, especially before its maturity. The canes grown in new land contain saline and organic matters much stronger in proportion than those collected in old ground to an equal density of juice. The climate or the latitude in which the cane is cultivated, also makes an immense difference in the proportion of all these matters.

The cerosie and fibrous matters detached by pressure, are found in greater or less quantity as we take the juice in going from the mill or after having deposited it.

The juice of the violet and ribbon cane contain cerosie in a much greater quantity than the other varieties of the cane.

The foregoing giving us a pretty good idea of the constitution of the juice of the cane, let us now observe the action of lime upon liquid sugar. In order to arrive at this end, I take lime made with white marble, that is to say, of pure lime, and I assure myself beforehand that this lime contains nothing else but lime; that is, of the oxide of calcium. With this lime and distilled water I make pure lime-water, and filter it.

I take then a determinate volume of the juice of the ribbon cane, of the density of 1061.5, marking $8\frac{1}{2}°$ by *pese-sel* of Baumé, (the medium density of the cane-juice of Louisiana.) I add to this cane-juice water of lime filtered until precipitation has ceased; I act upon it cold. I decant it, I collect the precipitate in a filter, and examine what it contains, of what it is formed. After necessary operations, and which it would be too long for me to detail, I find that the precipitate determined by the lime water in the cane-juice is formed of:

Sub-phosphate of Lime.	Oxide of iron and Manganese in very weak proportions.
Phosphate of Magnesia.	Chlorophylle united to a little fat substance.
Carbonate of Lime.	Cerosie.
Albuminate of Lime.	Cellulose and other particles of the tissue of the cane.
Caseine and Gluten combined with Lime.	
Silica.	

If it were necessary to show in what proportions these substances are found in the cane-juice in all possible degrees, and at all epochs of the growth of the cane in Louisiana and elsewhere, I could satisfy you upon this point.

I was the first to make known, about ten years ago, that the juice of all varieties of cane at all periods of their growth contains:

Phosphate Acid of Lime.	Organic Salts of Potash.
Phosphate of Magnesia.	Gluten.
Salines, combinations of iron and Manganese.	Cerosie.

and I do not believe that it is possible to be furnished with a single proof to the contrary. The chemists who had examined the cane before me, had only detected sulphate and muriate of potash, chlorophylle and albumen vegetal.

When I announced the presence of phosphate of lime and magnesia in the cane, it was at first denied, because people always begin by denying. It was said to be impossible, because such or such a

one had not observed the fact; then they kept quiet for a time; after that it was supposed or alleged I was mistaken. Finally they began to see a little more light, and ended by acknowledging I was right.

It is evident to me, sir, that all these substances which I mentioned above were contained in the cane-juice I submitted to this treatment; but some of them did not exist in the state in which I obtained them. The phosphate of lime existed in the state of phosphate acid; that is to say, soluble. The lime water brought it to the state of sub-phosphate, and rendered it insoluble; it is the same with the phosphate of magnesia. The lime water can separate integrally the two salts from the cane-juice.

The lime kept in dissolution in lime water was combined with the carbonic acid existing in the cane-juice, and there resulted from it the carbonate of lime.

It (the lime) was also combined with the albumen and gluten, and carried them off in part from the juice of the cane in coagulating them. The other substances were carried off or separated by the action of the lime, either by decomposition or by rendering them insoluble.

The salts of potasse and other organic matters remain integrally in the juice of the cane; lime has not the power to form combinations insoluble with them.

The juice of the cane in its normal state does not contain particular acid, organic acid in its free state; the persons who advanced it were in error. It contains only a weak quantity of carbonic acid at the moment of pressing it.

If the juice of the cane, however rich it may be, is always acid to reactive paper, it owes this property to the presence of bi-phosphate of lime, which it constantly retains.

Let us not forget what we have just said above, sir; we will therefore recapitulate.

In the making of sugar, when I add milk of lime to the juice of the cane with the view to clarify it, there is an instantaneous decomposition of the acid phosphate of lime and the phosphate of magnesia. These two salts were contained in this juice. The lime which I add to it makes them pass to an insoluble state. They then appear in the form of grayish gelatinous flakes, slimed by the other organic matters existing in the juice of the cane, and the coagulation of albumen by heat takes place at the same time. The effect produced during this reaction is precisely similar to that which the refiner obtains in adding *finings* to certain sirups in order to clarify them. Persons who are not familiar with chemistry, who see albumen in jelly, and the sub-phosphate of lime recently precipitated side by side, would certainly take them for the same substance.

You see, then, sir, that the theory of defecation of the cane-juice by lime, or by a milk of lime, is not enveloped in so much mystery as they say. It is nearly ten years since I explained it, as I have just observed to you. Great truths have been sometimes disparaged, and even for a long time combatted. But they always end by triumphing over ignorance and prejudice.

In addressing you these remarks upon the chemical part of Professor McCulloh's report, my only object has been to show that this work is not without faults, and even great ones; that it does not deserve all the praise which has been lavished upon it; that it contains, on the contrary, numerous errors—errors which are not pardonable in a Professor of Chemistry. I am disposed to believe that the professor could have done better if he had brought to his investigation of the sugar cane more attention and research. Such research would require at least one year, because it is indispensable that he should examine the cane, and analyze it at all periods of its growth.

I have spoken above of quotations mutilated or disfigured by the professor. I will give you a specimen in which I am directly concerned, where he speaks of cerosie.

In paragraph 1st, page 22d of his report, the professor says: "Cerosie is a substance closely resembling beeswax, both in its appearance and its properties. It was discovered or first investigated by Mr. Avequin, of New-Orleans, who gave it the above name. A more full account of it, taken from Mr. Avequin's description and analysis, is given in the Treatise on Chemistry, both of Liebig and Dumas,* to which I therefore refer. The planter may, however, for all his purposes, regard it as wax."

Professor McCulloh gives here the description of a substance which he does not know, which he has never seen, and the properties of which he disfigures. The cerosie does not resemble, in any respect, beeswax. Cerosie may be considered as an alcohol, unique in its kind, since it is the only one which is found completely formed and in a state of purity in nature.

Its atomic formula is represented by $C.^{24}\ H.^{50}\ 0 = 24\ (C.H.^{2}) + H.^{2}\ 0.$

Judge, then, of the exactness of the professor:

Ab uno disce omnes.—VIRGIL.

The professor would not believe that cerosie is an alcohol or an aldehyde, these substances have so little resemblance to each other.

Chapter I, from page 22 to page 36, contains the *chemical investigations* of Professor McCulloh. I have limited myself to showing you some of the errors in the first chapter, only the most striking, because it is not necessary to be a great chemist in order to detect them.

The chapters II and III, are, for the most part, only extracts from French and other authors, more or less mutilated, relating to practice and to new apparatus. Mr. V. Aime has pointed out some of the errors which they contain; but he has not said *all* upon this subject. I will return to this whole matter, if there be any occasion for it.

* Dumas—Traite de Chimie, vol. 6, page 699, Paris 1843. Liebig—Chimie Organique, vol. 2, page 304, Paris, 1844. Gerhardt—Precis de Chimie Organique, tome 1, page 134, Paris, 1844.

The facts that I have exposed in my letter, are due to my own researches on the sugar cane. I borrow nothing from those who have written on this subject. If I have committed some errors, they must be attributed to me alone.

Receive, sir, the assurance of the distinguished consideration with which I have the honor to subscribe myself,

Your ob't. serv't.

AVEQUIN.

Note by Editor.—The paper above has been but loosely translated, and is susceptible of great condensation and improvement, did time permit. The press, however, awaits it. Let not the reader be discouraged by the length, for the subject is one of very great importance to the sugar interests of our country, already so vast. Mr. McCulloh will consider us entirely disinterested in the criticisms we admit upon his work. Truth is the sole object of investigation. Where shall it be found? As the organ of the sugar interests of the United States, it becomes us to hear every side. If we permit the attack—*we are ready to hear the defence.*

As the proof of this article will neither be read by the author or editor, it is not improbable mistakes will occur in the scientific terms, &c., from the badness of the manuscript. The reader will correct such.

Art. III.—PRINTING AND PRINTERS.

THE printing-office has been called "the poor boy's college;" and there are many literary colleges in our country whose register of graduates would exhibit far less fruitful results. The daily pursuits of the youth engaged in acquiring the mysteries of the "*Ars Typographica,*" are calculated, if not to awaken in him a thirst for knowledge, at least to store his mind with a mass of useful information. He becomes familiar with the current literature of the day, with the history, pursuits, and peculiarities of various authors; learns to discriminate between different excellencies of style, and often lays the foundation upon which he may, afterwards, himself rise to distinction. Not only to the Art of Printing, but to the practical professors of the art, is the literary and scientific world indebted for the advancement of learning.

Printing is said to have been known in China upwards of nine hundred years ago. In the time of Confucius, 500 B. C., books were formed of slips of bamboo, and about the tenth century printing was in general use. The first newspaper of which we read, was issued in manuscript at Venice in 1583, called the Gazette. During the same year, the "Geneva Bible," prepared by the refugees in the times of "Bloody Mary," was printed, and also a version of the Psalms, printed by John Daye, a relative of Stephen Daye, who introduced the first Printing Press in the United States. Previous to this time, (as far back as 1450,) we are informed of the publication of a Bible in Latin, eight years before the method of casting types in a mould was discovered.

The first attempt at printing with types is traced to engravings on blocks of wood. The honor of the invention is claimed by citizens

of three different cities—Harlæm, in Holland, Strasburg and Mentz, in Germany. Laurentius Coster, John Guttenburg, and John Faust, each claimed to be the inventors of the Art. As early as 1442, Guttenberg is said to have printed two small books in the city of Mentz. The Art was first introduced into England in 1471, by Wm. Caxton, and in 1500 it was known in between two and three hundred places. In 1588, the first printed sheet was published in England by "Her Majesty's Printer," but was not sent out regularly; another was published at Frankfort, Germany, in 1612. During the same century, the "London Public Intelligencer" was put forth, and several other journals of very singular titles, such as "The Secret Owl," "The Scot's Dove," "The Parliament Kite," &c.

Addison's Spectator, and The Tattler of Sir Richard Steele, were the first purely *literary* journals of which we have any knowledge. In dramatic literature, we have the first edition of Shakspeare's Plays, which were issued from the press between 1597 and 1623, A. D.

The "*Journal des Savans*" was the first Review in France, and was commenced in 1665. On the 24th April, 1719, the Boston News Letter appeared—the first in America. It is estimated that there are, at the present time, in course of publication throughout England, Ireland, Scotland, Wales, and the British Isles, *five hundred and fifty-five* journals, dailies, tri-weeklies, semi-weeklies, weeklies, semi-monthlies, and monthlies. The great majority of these are published in England. One of these journals was established in the year 1600; and previous to 1700, five more were put in successful operation. In the United States, there are nearly *two thousand*, over three times the number issued in Great Britain, and more than the whole number published in all other parts of the world together. In a single building at Boston, the publishers issued fourteen papers, employing the services of sixty-five persons, the labor of whom is estimated at $27,000 per annum, and the cost of the paper, $30,000 more.

Two journals, 8 by 13 inches, were printed at Camden and Claremont, S. C., just after the Revolution, one in 1786, and the other in 1803. A copy of each of these papers was lately exhibited at one of the printing offices in Charleston, the contents of which were indeed curious, as showing the state of journalism at that period. A line omitted in one of the communications is supplied by printing the words in the margin.

The State of Iowa, fourteen years ago, was the habitation only of its original tribes. It now supports 16 newspapers, democratic, whig, neutral, religious, and agricultural.

The following brief sketch will convey some idea of the business done in the splendid establishment of the Harpers, in New-York:

One of their buildings is five stories high, having five windows in each story across the row, and extends from Cliff-street to Pearl. Two other buildings join this on Cliff, and opposite on the same street are two buildings more, of vast size, in which the type-setting and stereotyping are done. There are 19 Adams and three Napier presses, worked by steam, which throw off 70 reams of paper per day—that is to say, 34,000 sheets—making 201,600 sheets per week, and 104,483,200 per year; which is equal to 1000 octavo volumes, of over 500 pages

each, per day, 6000 per week, and 312,000 per year. We understand that during the last year, the number of volumes, of all sizes, thrown off, was not less than 2,500,000 The fixtures in the bindery are valued at $13,000. Here 52 barrels of flour are used per year for paste; of glue, 42 barrels; 750 packages of gold-leaf are used in the same period for lettering, ornamenting, &c. Here, likewise, are used 700 pieces of muslin, of 40 square yards each, and 60,000 of pasteboard. 14,400 sheep are slain per annum to supply skins for the establishment. In immense vaults beneath the establishment are stored 800,000 pounds of stereotype plates, valued at from 7 to 9 cents per pound. 800 pounds of metal are used weekly for casting, making 41,000 pounds per annum. In the composing-rooms are 80 to 90,000 pounds of type. The stock in trade is estimated at about $2,000,000. They employ 400 persons, a little less than one quarter of whom are females. About sixteen hundred persons are supposed to depend upon this establishment. The sum paid to persons employed is about $200,000 per annum. Messrs. Harper and Brothers have paid to authors immense sums of money. Stephens has received from them $50,000; Prescott, $20,000; and Dr. Anthon, too, must have received a fortune at their hands.

The Philadelphia United States Gazette sold for $45,000. One-third of the New-York Courier, $38,000; and one-fourth of the New-York Tribune, $25,000. One-half of the Boston Atlas, $35,000. The Boston Daily Advertiser is valued at $90,000, and $40,000 has been refused for one-half of it. The French Courier, published in New-York, sold the other day for $50,000; and the Albion, we think, for $25,000.

A few years ago, there was not a single English newspaper published in any part of the Pacific, nor upon the western coast of North or South America. Now its journals are extending over California, Chili, and the Sandwich Islands.

The Bible has been printed in 130 languages and dialects. The number of copies issued by the Bible Societies is supposed to be about *thirty millions!* Nearly one million and a half of copies have been printed in a single year, by the British and Foreign Bible Society alone. The American Bible Society are now printing at their establishment in Nassau-street, New-York, about 70,000 copies of Bibles and Testaments monthly, equal to 840,000 annually, and yet are not able to meet the increasing demand.

The Religious Press in this country and in Great Britain, has been, and continues to be, a medium of the most widely extended operations.

The condition of the Cherokees in the west, is a most extraordinary encomium upon the agency which the Art of Printing has exerted in the promotion of civilization and refinement. These people have now a weekly newspaper, a Male Seminary, and a Female Institute in progress. A number of Tracts, Hymn-Books, Arithmetics, Spelling-Books, Primers, Almanacs, and copies of the Cherokee Alphabet, and the Constitution and Laws of the Nation, compose the articles deposited under the corner stone of the latter edifice.

A paper, in the Chinese language, has lately been established at Canton. The Pekin Gazette is published at irregular periods, and distributed throughout the empire; and the Mandarins consider it a matter of great importance to secure an early reading of the Gazette, in order that they may be enabled to proceed in their official duties. It is

the only medium through which they can arrive at any knowledge of the will of their sovereign. Express riders are always in readiness to carry the Gazette in different directions as soon as published. A high Mandarin, who is compelled to secure an early perusal of his paper, pays something like $20 per month for the privilege—while those who are satisfied to wait, get off with $2 per month—rates of subscription which, it is to be supposed, would pay the printer tolerably well for his trouble. It is said that several numbers of a Chinese journal, *printed on silk*, have been preserved in a library at Paris, the length of which is 10¼ *yards*.

An official report made by an English commissioner, respecting China and the Chinese, presents the following information respecting the literature of the Chinese:

"The Chinese are a reading people, and the number of their published works is very considerable. In the departments of morals, history, biography, the drama, poetry, and romance, there are no lack of writings, such as they are. The Chinese Materia Medica comprises forty octavo volumes; of statistical works, the number is very large. Their novels are said to be excellent pictures of the national manners. China is full of books; new authors are continually springing up; the press is active, and the traffic in books is a lucrative and most honorable branch of trade. When examinations take place in the capital or the palace, the most clever students are chosen to fill the office of book-makers. There are, however, few really new works, and all that appear are compilations and quotations; the author never venturing an idea of his own; and in this consists true learning, according to Chinese notions. There is one work in the royal library, on the topography of China, which is said to consist of 5000 volumes; some of the best translators that have had access to some extracts from this giant, were sadly disappointed, as it appears to be a mass of confusion, without any attempt at order or proper arrangement. There are numerous small treatises, similar to our tracts, gratuitously distributed by private individuals, inculcating morality and virtue. Printing is evidently cheaper in China than in Europe, when ten volumes, each containing 100 pages, can be purchased for less than a dollar. Every peasant and the poorest fisherman can read and write. Private and public schools are numerous in every province, and entirely independent of Government. Occasionally an examiner visits all schools to ascertain the qualifications of the teachers."

Hoe's last fast Printing Press was first introduced into New-York by the proprietors of "The Daily Sun," and is about to be introduced into Paris. The inventor has made contracts for building two of these presses, each capable of printing from 10 to 12 thousand copies per hour. The cost is over 120,000 francs, or $24,000.

A printing press has been invented by a gentleman of New-York, which is calculated to print off 80 sheets in a single revolution of the cylinders, taking an impression on both sides of each sheet. The number of sheets which it is estimated that it will print in an hour, is not less than 20,000.

The restrictions upon the liberty of the press in France, which partly led to the recent developments of popular feeling in that distracted country, caused the suspension, during the reign of Louis Philippe, of 57 journals. In spite of the formal promise of the king, in his inaugural, that no further prosecutions should be instituted, the writers of these journals were sentenced to heavy fines and imprisonment. The Emperor of Russia does not venture to allow

American newspapers, and their liberal sentiments on the subject of civil and religious freedom, to be circulated among his fifty millions of *freemen!* Among the list of foreign newspapers to which the privilege of admission is vouchsafed, we find 156 German, 103 French, 45 English, and 2 Polish, but not a single American sheet!

These things stand in striking contrast with the state of the Art in our own country, where every facility is extended, through low rates of postage and the use of the franking privilege, to the free circulation of newspapers, and the remitting of subscriptions to publishers, without any further expense or loss to the latter.

In the cost of advertising our merchants enjoy great advantages over those of England. There, a duty of thirty-five cents on every advertisement, inserted in a public journal, increases the total expense seventy per cent. on the amount charged for the advertisement.

The press, everywhere, begins to assert its independence, and the most despotic of rulers are compelled to acknowledge its claims. Perhaps one of the grandest results of the present revolutionized condition of nearly all Europe, will, next to the establishment of free institutions and governments, be the increased facilities which will be given to the advancement of education and literature, by the removal of all restrictions upon this great, this inestimable privilege of freemen.

There is no individual class of men to whom have been cheerfully accorded, by universal consent, more privileges, and at the same time more privations, than those whose business it is to supply the world, by the labors of their hands, with everything in the shape of knowledge and intelligence connected with the current operations of the day and age. The historian and the biographer are alike useful in their day and generation; but the facts which they record for the information of future generations, are but second-hand repetitions of what the printer has already circulated to the world before him, only in a less systematic and more desultory form. In this respect, the latter is the most useful of the three.

A New-Orleans paper gives an account of five printers employed in a single office, four of whom have served their country on sea and land. One of these was an actor in the great battles of Palo Alto, Resaca de la Palma, Monterey, (where he lost an eye,) Vera Cruz, and Cerro Gordo; another was at the storming of the heights of Monterey; a third, served a year in Mexico against the robber bands; a fourth, is an officer of our navy. One or two of them have lived among the chapparals of Mexico, the Cordilleras of South America, and the ruins of the earthquakes of Caraccas. On one occasion, General Scott wishing some general orders printed, ascertained that, in consequence of a scarcity of hands in the office to which they were sent, the work could not be accomplished in time. He then, on the morning of parade, ordered all in the ranks who were practical printers to step forward three paces in front, when *several hundred men—all printers*—obeyed the order.

The dignified Senate and House of Assembly have drawn a por-

tion of their resources from the typographical ranks. Senator Cameron, of Philadelphia, uses a letter-stamp, on which is engraved a printing-press, and over which is the motto, "*Persevere.*"

Twenty-five years ago, this same senator was seen to enter a printing-office at Harrisburg, (Pa.,) with a small bundle of clothing flung across his shoulder, on a stick, asking for labor, whereby he might earn sufficient to support himself and indigent parents. He was taken as an apprentice to the business, served his employers faithfully, and finally graduated from an obscure printing-office to the Senate Chamber of the United States.

There are in the Pennsylvania Legislature twelve or fifteen printers, editors and ex-editors.

At the celebration of the birth-day of Franklin, at Boston, by the Franklin Typographical Society, there were three invited guests: Hon. J. T. Buckingham, Hon. S. T. Armstrong, (formerly Governor of Massachusetts and Mayor of Boston,) and N. W. Bryant, members of the Massachusetts Senate, who had been practical printers, as was also the orator of the day, C. C. Hazewell, who has also attained to some eminence as a political writer. One of the invited guests of the occasion gave an account of a printers' festival, which he had attended at Paris, where he had the pleasure of meeting Beranger, the printer-poet. At the Paris festival, police officers were stationed at each table to inspect the toasts, and see that no sentiments, disrespectful to the government, were uttered; and when, the next morning, a single journal was found to contain the proceedings, it was seized and burnt. This he gave in illustration of the superior liberty of the press in the United States as compared with other countries.

Senators Dix and Niles were also practical printers.

An editor mentions a printing-office which he often visited in his youth, in which were four journeymen printers. One of these is now a Member of Congress, one a clergyman, and another an editor. Three of them were hard students, and have attained to considerable distinction as scholars.

The associate editor of "The Literary World," (J. Bayard Taylor, Esq.,) was once an apprentice in a printing-office. After serving his time, he travelled over a portion of Europe, supporting himself in the mean time by his profession, and on his return published a volume of his travels.

Captain Donnovan, who has written a book of Adventures in Mexico, was a printer. He became a volunteer, and was captured by the guerillas of Canales, was sold for seven hundred dollars to a Mexican editor, from whom, after having served some time as typesetter, his ingenuity and bravery enabled him to effect his escape.

George P. Morris, Horace Greely, Robert Sears and James Harper, are four eminent names of distinguished authors and publishers, who have risen to their present station from the daily routine of a printing-office.

Most of the early printers were men of profound learning. In the first stages of the Art its professors often wrote or edited the works which they published. Among the most celebrated of these

men were a family of Stephens's, who, for more than a century, astonished the world, both with their acquirements and the magnificent specimens of typography issued from their press. In the year 1557, one of them, Henry Stephens, published a large number of editions of ancient authors; and his "Thesaurus" of the Greek, remains to this day the great lexicon of the language. Robert, (another brother,) is distinguished for his very beautiful edition of the New Testament. The following account is given of him by his biographers.

"He received only such compositors into his printing-office as were conversant with the Greek and Latin languages. His workmen, in and about the office, were obliged to speak Latin. His wife and daughter understood this language thoroughly, and assisted him in carrying his directions into effect, so that, throughout his whole house and printing establishment, from the bureau of business to the kitchen, nothing was heard but the Latin tongue. He usually employed the proof-readers all from foreign countries, who spoke the various languages which they corrected. The zeal of this early and learned printer for study, for maintaining the honor and dignity of the press, and for the public good in general, is worthy of the highest commendation: and his character in this respect is worthy of imitation by all the members of the craft.

"'The glory of the house of Stephens was shared by five successive generations,' first in Paris, and afterwards at Geneva, in Switzerland."

Mr. Walter, of the London Times, was the first who applied the power of steam to the operations of the press. As early as 1804, an ingenious compositor, named Thomas Martyn, had invented a self-acting machine for working the press, and had produced a model which was very satisfactory. In the completion of his work he was much exposed to the hostility of the pressmen, who vowed vengeance against this threatened destruction to their craft. In consequence of their bitter opposition it became necessary to introduce the various pieces of the machine into the premises with the utmost possible secrecy. An English paper thus speaks of the extent of this opposition, and the agency of Mr. Walter in carrying forward the project, in spite of it.

"To such a length was their opposition carried, that it was found necessary to introduce the various pieces of the machine into the premises with the utmost possible secrecy, while Martyn was obliged to shelter himself under various disguises in order to escape their fury. Mr. Walter, however, was not yet permitted to reap the fruits of his enterprise. On the very eve of success, he was doomed to bitter disappointment. He had exhausted his own funds in the attempt, and his father, who had hitherto assisted him, became disheartened, and refused him any further aid. The project was therefore for the time abandoned.

"Mr. Walter, however, was not the man to be deterred from what he had once resolved to do.

"He gave his mind incessantly to the subject, and courted aid from all quarters, with his usual confidence. In the year 1814, he was induced by a clerical friend, in whose judgment he confided, to make a fresh experiment, and, accordingly, the machinery of the amiable and ingenious Kœning, assisted by his young friend Bauer, was introduced—not, indeed, at first into the Times office, but into the adjoining premises, such caution being thought necessary, from the threatened violence of the pressmen. Here the work advanced, under the frequent inspection and advice of the friend alluded to. At one period these two able mechanics suspended their anxious toil, and left the premises in disgust. After the lapse, however, of about three days, the same gentleman discovered their retreat, induced them to return, showed them, to their surprise, their difficulty conquered,

and the work still in progress. The night on which this curious machine was first brought into use in its new abode, was one of great anxiety and even alarm. The suspicious pressmen had threatened destruction to any one whose inventions might suspend their employment—"destruction to him and his traps."—They were directed to wait for expected news from the Continent. It was about six o'clock in the morning when Mr. Walter went into the press-room and astonished its occupants by telling them that "the Times was already printed by steam!—That, if they attempted violence, there was a force ready to suppress it; but that if they were peaceable, their wages should be continued to every one of them till similar employment could be procured—a promise which was, no doubt, faithfully performed; and, having so said, he distributed several copies among them. Thus was this most hazardous enterprise undertaken and successfully carried through, and printing by steam on an almost gigantic scale given to the world.

"Mr. Walter died in the midst of the General Election, on the 28th of July last, and the respect in which his memory was held, was shown by a circumstance almost without a parallel in Parliamentary history. The electors of Nottingham, on the day after his decease, without canvass or preparation, returned his son, Mr. J. Walter, to the House of Commons, by an immense majority."

We now enjoy in abundance the results of the mighty enterprise of these great discoverers, and have reason to be grateful that we live in an age in which science and art combine, without opposition, to give strength and permanency to our institutions. Every day brings us intelligence of some new invention, or the novel application of some old and long-established theory, to the production of almost inconceivable wonders of art and mechanism. Labor-saving machines are the order of the day; and the utmost extent of human ingenuity is taxed for the invention of more and more, till we can almost anticipate the period when manual labor in many departments of industry may be entirely dispensed with. But the printer is too important a member of the business community to have his usefulness set aside by the multiplication of type-setting and press-working machines, which are always liable to error, and to get out of repair. A good printer regards a single typographical error an indelible stain upon his reputation. In fact, we are told of one who deliberately committed suicide because a *turned letter* happened to be found in his matter. So long as the world jogs on, and society advances, the printer will always be among its class of useful citizens. And when he shall have filled up the *measure* of his days, and a small *space* of earth shall alone enclose his *outer form*, an *imposing stone* will mark the spot where rest his mortal remains, inscribed, like that of the immortal Franklin—

"The body of
——— ——— Printer.
(Like the cover of an old book)
Its contents torn out,
And stript of its lettering and gilding,
Lies here food for worms—
Yet the work itself shall not be lost."

Art. IV.—PRODUCTION OF RICE IN LOUISIANA.

Sir,—It was with much pleasure that I perused an article upon the subject of Rice,* in one of your numbers; a product that has latterly been diminishing, I think, in this state, the lands being bought up for the perhaps more lucrative crop of sugar. Though not quite so heavy in its gross amount as our two great staples, yet not an inconsiderable portion of our large parish, (Plaquemines,) and other parts of the state, are devoted to its production. This crop is more to be valued, as it is within the reach of the middling and poorer classes, giving to them a neat and comfortable support, and to many, a handsome revenue. But little capital is required in its cultivation, and it constitutes a particularly healthy food in damp southern latitudes. The consumption of it is immense; and from having been used a short time past in this county as a luxury, it is now to be found on all well-arranged tables in the Union.

In regarding the expensive and laborious works of a South Carolina rice plantation, one accustomed to the manner of its cultivation here, cannot but be struck with the very small difference in the yield, and the vast difference in labor. The quality, however, is different. South Carolina rice commands from one-half to three-fourths of a cent here more than Louisiana. This arises from two causes—the Louisiana rice not being as white, and the grains being more broken than the Carolina. Both of these faults, I believe, can be remedied by cultivation and improvements of machinery. I hoped to have seen in your article on the subject, the reason that some rice breaks more in cleaning than others. The difference in whiteness, I am aware, proceeds from the inferior manner of preparing it for market. Can you not point out the means of remedying the former defect, which must proceed from the *culture*? These are the two objectionable things against Creole or Louisiana rice. It is, however, much sweeter, and not so apt to get musty as the imported. I have heard exactly opposite reasons given by the planters here for the first of these faults. Certainly the improvement of a crop so important to a large number of the inhabitants of our state, tending to the division of our farming labors, a result most anxiously to be desired, from the low prices of both sugar and cotton, should occupy most particular attention.

The rice crop, from the great care with which it is made here, the extreme richness of the land, the adaptation of the climate to it, and perhaps it may be, the enervated habits of the people generally, has never been fostered or reduced to a science, as in other countries, where the soils are poorer and climate worse. I have conversed with many intelligent South Carolina planters and managers of planta-

* We have published several valuable papers upon Rice in our back volumes, and beg to call attention to them. The one in Vol. I., is the most elaborate yet published in the United States, and is from the pen of Mr. Allston, of South Carolina, a practical man, and an extensive planter. We invite information upon this subject from the rice planters.—[Editor.

tions, and they all agree, that the land is suitable and climate proper, to vie here with Carolina, in both quantity and quality. There is this difference in favor of the cultivation of rice in Louisiana, on the borders of our rivers and tributaries:—It is well known that in Carolina, on the rice plantations, the water used is tide water, with little or no current, and the swamps large; that the water lies on large districts, sometimes drawn off, at others let on, leaving great fields, subject to the influence of a burning sun, creating malaria, and engendering the worst kind of disease, insomuch, that the planters yearly leave the country for the cities, where smoke and fires, or some other causes, seem to dispel the evil.

Such is not the case here. It is a well-known fact, that the rice plantations, both as regards whites and blacks, are more healthy than the sugar and cotton. From what cause does this arise, has been often asked by many? With the same hot sun and climate, and occupying a district of thirty to forty miles on both sides of the river, with but two or three sugar plantations, at long distances, there exists almost one undivided rice-field, making on an average about thirty thousand barrels of clean rice yearly, and overflowing the whole country around them, except a few front acres, generally appropriated to corn and potatoes. There can be but one cause for its health. The fall of the land is abrupt to the bayous and lakes behind, and the sea being near, at the time the Mississippi is high the rice is at the watering stage, and the water here not being taken off at all, is kept constantly running from the river back, preventing the back water from ever becoming stagnant, and carrying off, with the rapidity of its current, the vegetable matter that in decomposing causes malaria. The water, too, being drawn off at so late a date, the land does not dry sufficiently early to cause decomposition, before the cooler and stormy months come on and disperse it. Most certain it is, that no country so thickly settled in southern latitudes as the rice planting part of the Parish of Plaquemines, has a greater amount of healthy people and fine children. Why is not more attention paid to the improvement of the cultivation and manufacture of this valuable and lucrative staple?

The rice planters, as a body, generally consist of those who have but small farms, not wealthy, and hitherto almost entirely uneducated, and unable, from the smallness of their means, to vary their crops from their general routine; and not having the capital to put up sufficiently valuable machinery, and to properly prepare their crops for market, nor yet to get out more than ten to twelve barrels a day, they have never progressed since their commencement. This, too, while our other staples have advanced beyond the most sanguine expectations; having, at this present moment, we may say, stocked the whole world.

The common system of rice-planting here, is to begin in February to dig out the ditches, which, in a farm of four acres front on the river, consists of one ditch, four feet wide or more, four to five feet deep, running from the river to the swamp, with a dam or gate behind, at right angles, to this main ditch. At every half-acre is a

two-foot cross ditch, with a bank behind it to confine the water about a foot high, or more. At the back of the field is a four-foot ditch running parallel with the river, with a high bank on the outside to completely dam in the field, with a flood-gate opening behind to gauge the height of water. When March arrives, all the ditches having been opened, they commence ploughing, mud or not, rain or sunshine, if the oxen can go through it. There are generally six oxen, two drivers, and one to guide the plough. The work is, generally, where the land is dry, well and neatly done, with the old Roman plough, by us called the French sock plough, the best in the world for stiff land. I have tried such land successively with the centre draft of Jacob's, Cary, and others, none of which could equal this with the same team.

The planters sow and harrow in the rice in succession, as they can generally water the back cuts first, being lower than the front; and in the early part of the season, the river is not high enough to water any but the back, which covers up first, and is ready sooner for the water. The rice is sown broad-cast, about three-fourths of a barrel to an acre. I have often seen the planters harrow it in with oxen, knee-deep in mud. As soon as the back rice comes up, they put on a little water, just leaving the heads out, to check the weeds and grass; and from this time out it is kept in water, always leaving the heads out until ripe for cutting, at which time all the water is drawn off, or a little before. When the rice comes up, the weeds and grass also appear; the grass is kept under by water, but not so the weeds, and a kind of grass having a thousand seeds, that sometimes takes almost entire possession of the fields. These have to be carefully eradicated with the hand, pulling them up frequently, knee-deep in water. The process produces disagreeable effects on the legs, but is avoided by greasing them before going in, in the morning. The hands weed about one quarter to one-third of an acre per day, and sometimes one-half or more, as the weeds are more or less bad, thick pulling them up by the roots, which readily yield. So quick is the vegetation of rice, that one weeding is enough; but from the slowless of the operation, the last part of the crop is very full of weeds before they can get to it, and sometimes should the water fall too soon, it is much injured by being choked by them. Here is, I think, one of the faults of the cultivation by the present mode. I will presently point out the mode of avoiding this disaster. The crop being finished, and the weeds taken out from the rice, they spend a short time preparing latania strips from the woods, to tie up the bundles, which they do in the field as it is dried. This is generally in July or August, when a man or two is hired to assist, and then, with the cycle, the rice is cut down very neatly, about one-half to three-quarters of an acre a day, as it may be, better or worse, standing or blown down. It dries one day in the sun. It is then tied in bundles, and put in small stacks in the field convenient to the cutters, without stack-poles. The grain is turned inside and the stem outside. When all is cut down and stacked in three small stacks, they arrange their

grain-yards and begin hauling in; the first cut being hauled first, and so on, until all is stacked at the house. The blocks are about three feet from the ground, and the stacks are made regular to hold about twenty barrels clean rice. They are well pointed, without poles, and topped with latania. By stacking first in the field in small stacks, the first sweat is passed through, and when it is opened and hauled, it is stacked a second time; it then becomes aired, and dries perfectly, and keeps for years without mould or mildew.

When rice is wanted for the mill, eight or ten tackeys, or small horses, are tied one to another to a post; the rice is placed on the ground about three feet deep, the heads up, and the animals are made to trot around, occasionally shaking up the rice. In this way about twenty barrels per day are usually trodden out. It is then turned in a small hand-mill of wood, like a common corn-mill, and partially hulled; then placed in a mortar, or four mortars in a row, where the like number of pestles pound it till the balance of the hull, and a skin that has a yellow appearance, is taken off. When it is fanned and freed from the chaff by this process, about seven to eight barrels a day is cleaned and prepared for market. This is, as yet, the largest amount averaged, I believe, in a day, except by a small steam-mill once started here by an engineer, which got out about twenty barrels a day; but the prejudice was so strong against that mode of cleaning, that the mill could at last neither buy, nor get rice upon toll, and was abandoned.

It is by preventing the weeds in the rice that its more extensive cultivation can be conducted, a better article produced, and the worst part of the labor avoided, allowing the worker to make more to the hand by a considerable quantity. It is here, generally, the rice planter fails; the weeds and grass catch him, and he loses much of his yields. He has also a worse quality of rice. I have recommended the following cultivation to several planters, but have been told that enough is made by the present process, and why should our alteration be adopted? The reason the weeds are so bad and the grass so troublesome, preventing the cultivation of so many acres properly, is that the ground is broken up in the spring after all the grass begins to grow, and the rice being planted immediately in succession, the roots of the grass and weeds never lose their life, but go on growing immediately, and gets ahead of the rice, which has to sprout, and is at first delicate and slow in starting. These roots can be killed by starting the ox plough in October and November, and ploughing all the land deeply during those months, the roots of the grass being turned up and exposed to the frosts of winter. Ditch in December and February, and then, with three horse ploughs in March, the already pulverized ground can be turned up and knocked to pieces, and harrowed over with a light horse harrow; then sow the rice and harrow it in lightly, keeping the ground as dry as you can; now you may moisten it with water slightly, and the rice will all come up and require little or no weeding. The quality will be better, and the quantity certainly considerably increased. By this process also, the old residuum on the ground will, being ploughed in early, be well rotted, and assist the

vegetation of the crop. The consequence of this fall and winter ploughing would save the like amount of work in the water at our most unhealthy season, and in the most valuable time to the planter. The weeding being light and early over, the preparations for cutting can be sooner made, the crop gathered in in good time, and I have no doubt, that instead of seven and eight barrels, ten and twelve can be made to the acre, and a much easier crop.

If the Carolina mode of working by drill were tried properly, I have no doubt it would be found advantageous here as it has been there. I have tried fifteen or twenty acres many years ago in that manner, and found it do well, yield well, and the rice was of good quality. I had no difficulty, with a good canal, in taking the water off and on when wanted. I hoed it the same as corn, and then let on water again. It is said that water had better be kept on until the rice is nearly ready to be cut, as it makes the stalk tender, and prevents it from breaking. In case of blowing down, many say if they make very heavy crops they cannot take them off. This is applicable to all southern crops; more hands have always to be hired in harvest, and it is a poor excuse.

There is no reason why Louisiana rice should not be as good as any other, and yield as much, except bad cultivation and worse manufacture. There is an immense amount of valuable rice land in the lower part of this parish, near the sea shore, on the river, very cheap, and far more valuable in proportion to their quantity than any other lands in the state. They have the advantage of climate for sugar, rice, or cotton. The net product of a common acre of land in rice, ready for sale, is eight to ten barrels. The common price is seven to eight dollars, sometimes five and ten dollars per barrel. The acres planted per hand are eight to ten, and as many as fifteen, sometimes, by the inhabitants of this neighborhood.

Trusting that these hasty lines will be followed by more elaborate contributions from experienced pens, and that an interest will be given in Louisiana to the important subject of rice,

I am, your ob't serv't,

R. A. WILKINSON.

Parish of Plaquemines, La.

AMERICAN STATISTICS.

OLD AND NEW STATES, REVOLUTIONARY STATISTICS, &c.

We have gathered, in a form for preservation, several items which may prove interesting to our readers.

1. The number of soldiers furnished by the American States during the Revolution, and the population of each in 1790 and in 1847.

2. Principal battles of the Revolution, their several dates, commanders-in-chief, and losses on each side.

3. Amount of continental money issued to support the war, and the estimated cost in specie.

4. States admitted in the Union since the organization of the Federal Govern

ment in 1789, the date of admission, and the population at first census thereafter, and in 1847.

5. Area of the several States, population to each square mile, and the number of enrolled militia in the Union, estimated to 1847.

6. Amount of money deposited with the States by Act of Congress in 1836; also the total amount of property, real and personal, in each State, computing $400 per head, the average adopted by the Commissioner of Patents in his Report of 1847.

7. Principal treaties with the Indians for lands north-west of the Ohio, and quantity ceded to the United States.

8. Estimated number of Indians between the Mississippi and Rocky Mountains, and the number west of the Rocky Mountains.

9. Area of the grand divisions of the Globe, with the population of each, and also to the square mile.

10. Productions of the United States, according to the census of 1840. This was the first attempt by the Government to obtain specific information in regard to the agricultural, mineral, and manufacturing industry of the Union. The estimates since have been predicated upon the statistics returned in 1840.

Some of these tables may be useful for reference, and are compiled mainly for that purpose. They are all from sources entitled to credit.

1.—REVOLUTIONARY STATES.

	Soldiers.	Pop. 1790.	Pop. 1847.
New-Hampshire	12,497	141,899	300,000
Massachusetts (including Maine)	67,907	475,257	1,450,000
Rhode Island	5,908	69,110	130,000
Connecticut	31,959	238,141	330,000
New-York	17,781	340,120	2,780,000
New-Jersey	10,726	184,139	416,000
Pennsylvania	25,678	434,373	2,125,000
Delaware	2,386	59,098	80,000
Maryland	13,912	319,728	495,000
Virginia	26,678	748,308	1,270,000
North Carolina	7,263	393,751	765,000
South Carolina	6,417	249,073	605,000
Georgia	2,679	82,548	800,000
Total	231,971	3,820,959	11,546,000

2.—BATTLES OF THE REVOLUTION.

When and where fought.		Am. Com. and loss.	British Com. and loss.
Lexington	April 19, 1775.	84	245
Bunker Hill	June 17, " Warren	453	Howe 1054
Flatbush	August 12, 1776 Putnam	2000	Howe 400
White Plains	October 28, " Washington	300	Howe 300
Trenton	December 25, " Washington	9	Rahl 1000
Princeton	January 3, 1777 Washington	100	Mawhood 400
Bennington	August 16, " Stark	100	Baum 600
Brandywine	September 11, 1777 Washington	1200	Howe 500
*Saratoga	October 17, " Gates	350	Burgoyne 600
Monmouth	June 25, 1778. Washington	230	Clinton 400
Rhode Island	August 29, " Sullivan	211	Pigott 260
Briar Creek	March 30, 1779 Ash	300	Prevost 16
Stony Point	July 15, " Wayne	100	Johnson 600
Camden	August 16, 1780 Gates	720	Cornwallis 375
Cowpens	January 17, 1781 Morgan	72	Tarlton 800
Guilford	March 15, " Greene	400	Cornwallis 523
Eutaw Springs	September 8, " Greene	555	Stewart 1000

The surrender of Cornwallis at Yorktown, October 19, 1781, closed the war; prisoners 7,073.

*5,752 British taken prisoners.

3.—CONTINENTAL MONEY.

Amount issued in 1775	$2,000,000
" " " 1777	20,000,000
" " in all to July 4, 1779	358,000,000

The whole expenses of the war, estimated in specie, amounted to $135,193,703.

4.—STATES ADMITTED SINCE 1789.

	Date.	1st Census.	Pop. 1847.
Vermont	1791	154,465	*302,000
Kentucky	1792	220,955	855,000
Tennessee	1793	105,602	950,000
Ohio	1802	230,760	1,850,000
Louisiana	1812	153,407	470,000
Indiana	1815	147,178	960,000
Mississippi	1716	75,448	600,000
Illinois	1818	55,211	735,000
Alabama	1819	127,901	600,000
Maine	1820	298,335	600,000
Missouri	1821	140,445	600,000
Arkansas	1836	97,574	152,000
Michigan	1836	212,267	370,000
Texas	1845	*140,000	140,000
Florida	1845	75,000	75,000
Iowa	1846	130,000	130,000
Wisconsin	1848	215,000	215,000

* For 1847, the estimate is from the Report on Patents; total 20,746,000.

5.—AREA, AND MILITIA OF THE STATES.

	Sq. Miles.	Pop. Sq. M.	Militia.		Sq. Miles.	Pop. Sq. M.	Militia.
Maine	32,400	15	47,352	Mississippi	49,356	8	38,084
New-Hampshire	9,500	30	34,471	Louisiana	47,413	7	15,808
Vermont	9,700	30	28,536	Arkansas	54,617	2	4,028
Massachusetts	7,800	95	92,215	Tennessee	41,752	20	75,252
Rhode Island	1,251	87	15,955	Kentucky	40,023	20	81,276
Connecticut	4,789	65	48,470	Ohio	40,500	38	190,258
New-York	46,220	52	191,079	Michigan	60,537	4	13,766
New-Jersey	7,948	47	40,170	Indiana	35,626	19	55,913
Pennsylvania	46,215	37	266,957	Illinois	56,506	9	86,234
Delaware	2,068	39	10,229	Missouri	70,050	5	62,689
Maryland	10,755	44	48,864	Florida	56,336	1	2,207
Virginia	65,700	19	121,988	Texas	100,000	1	.....
North Carolina	51,632	15	65,218	Iowa	173,786	1	.....
South Carolina	31,565	19	53,566	Wisconsin	92,930	2	10,223
Georgia	61,683	11	59,312				
Alabama	54,084	11	46,032	Total	1,262,842		1,821,093

6.—DEPOSITE WITH THE STATES, &c.

	Amt. Dep.	Value Prop'y.		Amt. Dep.	Value Prop'y.
1 New-York	$4,014,520	$1,112,000,000	18 Alabama	669,086	276,000,000
2 Penn	2,867,514	850,000,000	19 Illinois	477,219	294,000,000
3 Virginia	2,198,427	508,000,000	20 Louisiana	477,219	188,000,000
4 Ohio	2,007,260	740,000,000	21 Mississippi	383,335	256,000,000
5 N. Carolina	1,433,756	306,000,000	22 R'de Isl'd	383,335	52,000,000
6 Tennessee	1,433,756	380,000,000	23 Missouri	383,335	240,000,000
7 Kentucky	1,433,756	342,000,000	24 Delaware	286,751	32,000,000
8 Mass	1,338,173	340,000,000	25 Michigan	286,751	148,000,000
9 S. Carolina	1,051,422	242,000,000	26 Arkansas	286,751	69,000,000
10 Georgia	1,051,422	320,000,000	27 Florida	.....	30,000,000
11 Maine	958 838	240,000,000	28 Texas	.....	56,000,000
12 Maryland	958,838	198,000,000	29 Iowa	.....	52,000,000
13 Indiana	860,254	384,000,000	30 Wisconsin	.....	36,000,000
14 Connecticut	764,670	132,000,000	Oreg. T'y.	.....	8,000,000
15 N. Jersey	764,670	166,000,000	Dis. of Col.	.....	18,000,000
16 N. Hampsh'r	669,086	120,000,000			
17 Vermont	669,086	120,000,000	Total	28,209,230	$8,294,000,000

7.—INDIAN TREATIES IN NORTH WEST.

Place of holding.	Date.	Acres.
1 Greenville	August 3, 1795	17,724,489
2 Fort Wayne	June 7, 1803	1,634,000
3 Vincennes	August 13, 1803	8,608,167
4 Vincennes	August 18, 1804	1,910,717
5 St. Louis	November 3, 1804	14,000,000
6 Fort Industry	July 4, 1805	2,726,812
7 *Grouse-land*	August 21, 1805	1,244,211
8 Vincennes	December 30, 1805	2,616,921
9 Detroit	November 17, 1807	5,937,760
10 Fort Wayne	September 30, 1809	2,136,266
Total		58,539,343

8.—INDIANS WEST OF MISSISSIPPI.

The number of Indians between the Mississippi and Rocky Mountains is estimated at	293,101
West of the Rocky Mountains	420,000
East of the Mississippi	31,587
Total	744,688

9.—AREA AND POPULATION OF THE GLOBE.

Grand Divisions.	Sq. Miles.	Population.	Pop. to Sq. M.
Europe	3,700,000	240,000,000	65
Asia	15,700,000	400,000,000	25
Africa	11,000,000	68,000,000	6
Oceanica	4,000,000	20,000,000	5
North America	7,300,000	40,000,000	5
South America	7,117,000	18,000,000	2
Total	48,817,000	786,000,000	15

10.—PRODUCTIONS OF UNITED STATES, 1840.

Productions.	Average price.	Value.
1 Indian Corn	25 cents per bushel	$94,382,968
2 Wheat	$1 " "	84,823,272
3 Cotton	10 cents per lb.	79,047,956
4 Cotton goods		46,350,459
5 Woollen goods		20,696,999
6 Iron, cast and bar,	$40 per ton	19,327,640
7 Lumber		12,943,507
8 Tobacco	5 cents per lb.	10,958,665
9 Lead	3 " " "	9,371,735
10 Sugar	5 " " "	7,755,000
11 Coal	$4 per ton.	7,327,812
12 Ships and other vessels		7,016,094
13 Paper		5,641,495
14 Rice	3 cents per lb.	2,425,242
15 Salt	30 cents per bushel.	1,857,522

11—AMERICAN LEATHER AND TANNING BUSINESS.

Hon. Zadoc Pratt, of New-York, the most extensive tanner in America, we believe, has addressed a letter to the American Institute, in which he furnishes some most interesting statistics in regard to that branch of trade and manufacture. Mr. Pratt has sent us a copy of his communication. This gentleman deserves well of his country for the enterprise he has ever displayed, and in our intercourse with him, both in New-York and in New-Orleans, we have found the greatest satisfaction.

From the letter we extract the following in regard to the period occupied in tanning various descriptions of leather:—

	No. of sides.	Time of tan'g. mo.	ds.		No. of sides.	Time of tan'g. mo.	ds.
1841—San Juan	7,500	4	20	1843—Rio Grande	5,800	4	20
Orinoco	3,500	5	15	1844—Buenos Ayres	6,500	6	20
"	1,900	6	..	Orinoco	5,400	7	..
"	9,000	6	10	California	1,200	6	20
Laguira	22,000	7	15	Buenos Ayres	900	7	10
Orinoco	6,500	5	15	"	6,500	5	10
Matamoras	1,100	5	..	Orinoco	1,500	4	20
"	2,300	5	20	Rio Grande	2,100	5	..
San Juan	6,500	4	15	"	4,000	5	10
Montevideo	5,800	4	..	Orinoco	2,800	6	10
1842—Honduras	3,600	6	20	Laguira	5,100	7	..
Buenos Ayres	10,500	6	10	Rio Grande	1,100	7	..
Chagres	1,700	6	..	Buffalo	2,000	5	..
1843—Orinoco	1,100	5	..	Buenos Ayres	2,000	6	..
Montevideo	2,700	5	..	Rio Grande	8,500	6	10

From the above table, it will be seen the average time of tanning in 1842, was five months and seventeen days; of 1843, five months and twenty-two days; of 1844, six months; and of 1845, six months and eleven days. Average of the whole time, five months and twenty-seven days. The average weight of the leather was over eighteen and one-half pounds per side. This, according to the best authorities we have at hand, is considerably below the time employed in England. There, it is no uncommon thing for eight and ten months to be employed in tanning a stock of leather, and some of the heaviest leather, it is said, takes even fourteen and eighteen months. Such deliberation undoubtedly insures a fine quality of leather; but it may be questioned whether there is not a great loss in the increase of weight—a loss of interest on capital, and in consequence an unnecessary enhancement of price, which does not suit the American market.

12.—SOLE LEATHER INSPECTED IN NEW-YORK.

Showing the total number of sides of Sole Leather inspected in the city of New-York, during the years 1827 *to* 1847, *say* 20 *years; also, showing the nett value or price per pound of same, excluding all charges.*

Years.	No. sides.	Av. price.	Years.	No. sides.	Av. price.
1827	265,553	17½ cents.	1837	890,962	16 cents.
1828	284,978	18½	1838	749,556	17
1829	264,878	18½	1839	772,255	18 1-6
1830	326,298	18½	1840	638,112	16½
1831	440,000	19½	1841	687,101	16¾
1832	667,000	17½	1842	886,868	14 1-10
1833	882,609	15¾	1843	867,210	13¾
1834	828,175	13¾	1844	1,048,770	13½
1835	784,165	14¾	1845	1,037,500	12½
1836	925,014	17½	1846	1,074,256	11½

13.—HIDES—NEW-YORK.

Showing the number of Hides imported into, exported from, and consumed by the port of New-York, during the years 1827 *to* 1847, *say* 20 *years, closing each year on* 31*st December. This table includes Horse Hides, taken from Shipping and Commercial Lists and Customs.*

Years.	Imports.	Exports.	Cons'd.	Years.	Imports.	Exports.	Cons'd.
1827 ...	259,975	41,545	218,430	1838 ...	543,300	25,695	517,605
1828 ...	268,744	48,369	220,375	1839 ...	561,105	24,186	536,919
1829 ...	308,987	52,023	256,264	1840 ...	520,251	31,325	488,926
1830 ...	475,640	26,305	449,335	1841 ...	633,269	4,245	629,024
1831 ...	772,299	8,017	764 282	1842 ...	635,631	31,286	604,345
1832 ...	975,094	169,493	662,705	1843 ...	653,431	53.633	599,788
1833 ...	892,198	58,282	833,916	1844 ...	854,790	45,615	809,175
1834 ...	700,052	169,856	530,196	1845 ...	777,640	53,633	724,007
1835 ...	868,381	21,903	836,378	1846 ...	636,583	55,924	580,659
1836 ...	942,890	109,273	833,617	1847 ...	990,454	15,236	975,069
1837 ...	623,925	99,356	524,569				

14.—HIDES—LIVERPOOL.

Years.	Imports.	Exports.	Years.	Imports.	Exports.
1827.....	186,127	29,001	1837.....	573,384	166,930
1828.....	290,512	30,880	1838.....	503,896	102,000
1829.....	542,411	128,449	1839.....	816,085	190,000
1830.....	514,260	170,604	1840.....	643,785	170,000
1831.....	564,869	138,220	1841.....	924,060	200,000
1832.....	351,897	111,450	1842.....	666,974	259,265
1833.....	692,419	62,000	1843.....	846,526	176,536
1834.....	626,189	213,855	1844.....	800,871	.....
1835.....	682,141	337,444	1845.....	810,704	.....
1836.....	479,107	198,277			

From the census of New-York, in 1845, we gather the following:—

The number of tanneries in the State.....	1,414
Value of raw materials used and manufactured in the State	$4,052,949
Value of manufactured articles.....	6,585,006

This is for leather alone, not including boots, shoes, harness, &c., &c.

WESTERN STATISTICS.

1.—DISTANCES AND RATES OF FARE ON WESTERN RIVERS, &c.

In this day of travel, we deem rates and time worthy of notice, as belonging to the class of subjects within our jurisdiction. The season having arrived when journeys, for health, business and pleasure, are interesting, if not common, to all, we have collected items which may prove satisfactory, as deciding routes to a great centre or circumference of wayfaring. People, not only of New-Orleans, but from a distance, having excursions in view west and north, will be aided by our tables in economising time and expense,—the first not very important in summer, so health is promoted, and the other more or less weighty, according to purse and disposition.

We take New-Orleans as the point from which most of the computations are made. The rates of passage vary in winter and spring, the latter, towards the close, being about 50 per cent. higher, owing to the diminution of freights. The prices we name are those of first class boats. Less may be charged by those of a different description. Indeed, there is no uniform scale agreed upon for passengers, though the slide is not very great. The Mississippi, and its chief tributaries, with the principal towns, and spring rates, are thus stated:

	Miles.	Fare.
From New-Orleans to Baton Rouge	140	$5 00
" " " Natchez	300	8 00
" " " Vicksburg	420	10 00
" " " Memphis	810	12 00
" " " Cairo	1,020	12 00
" " " Louisville	1,400	13 00
" " " Cincinnati	1,540	15 00
" " " Maysville	1,600	17 00
" " " Wheeling	1,920	22 00
" " " Pittsburg	2,000	23 00
" " " St. Louis	1,200	14 00
" " " Dubuque	1,650	20 00
" " " Falls of St. Anthony	2,000	23 00
" " " Nashville, Tenn.	1,310	20 00
" " " Florence, Ala.	1,380	12 00

2.—DISTANCES FROM NEW-ORLEANS TO THE LARGEST TRIBUTARIES OF THE MISSISSIPPI, AND PRICE OF PASSAGE.

	Miles.	Fare.
To mouth of Red river	230	$6 00
" " Big Black river	350	8 00
" " Yazoo "	410	8 00
" " Arkansas "	600	10 00
" " White "	620	10 00
" " St. Francis "	670	10 00
" " Ohio "	1,020	12 00
" " Kaskaskia "	1,150	12 00
" " Missouri "	1,220	14 00
" " Illinois "	1,280	14 00
" " Makoketa "	1,650	20 00
" " Wisconsin "	1,750	20 00
" " Upper Iowa "	1,800	20 00
" " Black "	1,850	22 00

3.—DISTANCES TO THE HIGHEST POINTS OF STEAM NAVIGATION, &c

	Miles.
From mouth of Red river to Shreveport	262
" " Arkansas river to Fort Gibson	585
" " Tennessee " to Florence, Ala.	279

			Miles.
From mouth of	Cumberland river	to Nashville	201
" "	Kentucky	"to Frankfort	65
" "	Wabash	"to Lafayette, Ia.	312
" "	Illinois	"to Ottawa	266
" "	Missouri	"to St. Joseph's	464
" "	Ohio	"to Pittsburg	1,019
" "	Upper Mississippi	river to Falls of St. Anthony	947

Perfect accuracy is not claimed for these figures. River distances are seldom measured, and are given only as matter of opinion. We have used the best data within our reach. The rates of fare on steamboats may not be correctly stated in all instances, for want of the proper information, which no person could supply. Enough, however, is furnished to answer general purposes; the difference either way will be slight.

Having disposed of river travel, we glance briefly at the sea, with rates of passage to several ports in communication with New-Orleans.

4.—FARE TO U. S. PORTS FROM NEW-ORLEANS.

From New-Orleans	to	Mobile,	$5 00
" "	"	Pensacola,	8 00
" "	"	Tampa Bay	15 00
" "	"	Galveston,	20 00
" "	"	Brazos St. Jago,	15 00
" "	"	Savannah,	25 00
" "	"	Charleston,	25 00
" "	"	Baltimore,	30 00
" "	"	Philadelphia,	35 00
" "	"	New-York,	40 00
" "	"	Boston,	40 00

5.—FARE TO FOREIGN PORTS FROM NEW-ORLEANS.

From New-Orleans	to	Tampico,	$25 00
" "	"	Vera Cruz,	30 00
" "	"	Havana,	25 00
" "	"	Liverpool,	120 00
" "	"	London,	125 00
" "	"	Havre,	120 00

In regard to ship passage, there is less uniformity than on the rivers. The Northern packets, with fine cabins and accommodations, usually charge a little more than the prices above stated, and other vessels something less. As yet, there is no established line of packets from New-Orleans to any European port. The ships prefer taking freight, but will receive passengers on terms as favorable as can be afforded. It is, perhaps, unnecessary to say, that the rates specified are for the cabin. In the steerage, we presume, they would not be half as much.

The vessels that trade to New-Orleans are from all parts of the globe; and the traveller may be suited to a voyage accordingly.

6.—PRICES, FREIGHTS, INSURANCE, &C., EAST AND WEST.

Whatever belongs to commerce is worthy of attention, be it values or expense of any kind. To show several home markets, we have selected a dozen or fifteen articles, with prices to each. These indicate enough for a general view, about June 1, 1848.

Next in order, we have prepared a table of freights, which may be useful to parties interested. Barrel and pound measure is charged differently, and all bulks are usually resolved into one or the other of these classes,—five square feet allowed to the barrel.

Insurance to cover losses being common, we subjoin a statement of rates in New-Orleans.

7.—PRICES AT SEVERAL POINTS.

	N. Orleans.	St. Louis	Cincinnati.	Memphis.	Charleston.	Baltimore.	New-York.
Flour,.....bbl.	5 50	4 50	4 50	6 00	5 75	5 68	6 00
Mackerel, No. 1, "	10 00	11 00	11 00	——	——	9 00	9 00
Pork, mess,....."	8 50	7 75	7 75	——	——	9 50	10 00
Pork, bulk,.....pound,	3	2	2	3	——	——	——
Bacon,..... "	4	3	3	4	5	4	5
Lard,..... "	6	5	5	6	8	7	7
Coffee,..... "	7	8	8	8	8	7	7
Sugar,..... "	4	5	5	5	—	5	4
Rice,..... "	4	5	5	—	3	4	4
Nails,..... "	5	5	5	—	5	5	4
Tobacco,..... "	6	5	5	—	—	5	6
Candles, sperm,.. "	32	35	35	35	34	32	31
Molasses,.....gallon,	15	25	27	25	27	26	27
Whiskey,....."	18	15	15	17	—	23	21
Corn,.....bushel,	38	18	28	20	55	48	54
Salt,.....sack,	1 20	1 90	1 62	1 50	——	1 20	1 05

8.—STEAM-BOAT FREIGHTS, &c.

	Hhd. Tobacco.	Barrel.	100 pounds.	Cwt. Lead.	Bushel Corn.	Stock per head.
From St. Louis to New-Orleans,....	2 25	40	18	10	8	5 00
" Louisville " "	3 00	50	25	—	—	——
" St. Louis to Pittsburg,.....	——	60	25	18	12	——
" New-Orleans to New-York,....	6 00	60	—	—	10	——
" " " Liverpool,....	10 00	1 00	—	—	30	——
" Pittsburg to Philadelphia,.....	9 00	1 25	75	—	32	——

The rates from New-Orleans up the rivers are not given, for want of proper data. We presume there is something like uniformity, though we have not seen the rates published. They may be inferred, however, from the items of downward freight from Louisville and St. Louis.

As information to those who may desire to visit or travel beyond the North-Western Lakes, we annex rates of passage and freight from Buffalo, N. Y.

9.—PASSAGE AND FREIGHT FROM BUFFALO, NEW-YORK.

	Cabin Passage.	Steerage Passage.	Barrel.	100 lbs.	Oxen and Horses.
From Buffalo to Erie,.....	$3 00	2 00	50	20	2 50
" " " Conneaut and Ashtabula,...	4 00	2 50	50	20	3 00
" " " Fairfort and Cleveland....	4 50	2 50	50	20	4 00
" " " Huron and Sandusky,.....	5 00	3 00	50	20	5 00
" " " Maumee River,.....	6 00	3 00	50	20	5 00
" " " Monroe and Detroit,.....	6 00	3 00	50	20	6 00
" " " Mackinaw.....	10 00	6 00	1 00	30	10 00
" " " Milwaulkie.....	10 00	6 00	1 00	30	10 90
" " " Southport and Chicago,..	12 00	6 00	1 00	80	10 00

10.—RATES OF INSURANCE FROM NEW-ORLEANS.

By giving a few places near the head of navigation on the rivers, all the intermediate points will be included in the rates of insurance which we annex. Where the distance and risk are considerably less, there may be a slight reduction.

On the rivers, a premium of one per cent. is charged to St. Louis, Cincinnati, Nashville, and Montgomery, Ala. To Pittsburg, one and one-fourth per cent., and to Tuscumbia, Ala., one and one-eighth.

To Mobile, from one-fourth to three-eighths of one per cent.

On the Gulf of Mexico, to Galveston and Matagorda, one and a quarter; to Brazos St. Jago, two; to Matamoras, three, and to Tampico and Vera Cruz, from one and a half to one and three-fourths per cent.

To Savannah, Charleston, Baltimore, Philadelphia, New-York, Boston, and other Atlantic ports, one and a quarter per cent.

To Liverpool, Havre, and other European ports, from one and a quarter to one and three-fourths per cent.

11.—PORK TRADE OF THE WEST.

We avail ourselves of the labors of the St. Louis Republican and Western Journal, in the statistics that follow. They are of inestimable value. How inexhaustible is our great west?

HOGS SLAUGHTERED IN THE WEST.

OHIO.

Places.	1843-4.	1844-5.	1845-6	*Places.*	1843-4.	1844-5.	1845-6.
Cincinnati,	240,000	196,000	300,000	Waynesville,	6,000	6,000	9,000
Columbus,	14,000	8,000	19,000	Hamilton,	40,000	32,000	30,000
Rariesport,	1,700	1,500	4,600	Camden,	8,000	7,000	9,000
Lancaster,	2,500	1,100	1,300	Eaton,	3,800	7,000	1,400
Circleville,	4,300	12,000	19,000	Clarksville,	11 000	10.000	6,200
Chilicothe,	52,000	24.000	40,000	Centreville,	700	600	1,200
Bainbridge,	3,000	550	1,200	Dayton,	20,000	12,000	8,000
Baltimore,	1,300	800	1,900	Troy,	4.000	1,000	2,000
Waverly,	2,800	1,300	4.000	New Paris,	5.000	10,000	7,000
Portsmouth,	2,000	900	1,500	Middletown,	10,000	7,500	8,500
Ripley,	——	10,000	15,200	Winchester,	1,200	800	1,000
Xenia,	5,000	1,500	1,200	Bellbrook,	1,400	1,400	3,000
Franklin,	3,000	2,800	2,900	Lebanon,	4,000	4,000	4,300
Piqua,	5,000	1,500	2,000	Greenville,	2,500	1,000	600

INDIANA.

Places.	1843-4.	1844-5.	1845-6.	*Places.*	1843-4.	1844-5.	1845-6.
Richmond,	5.400	800	1,100	Lagree,	3.000	——	1,000
Madison,	65,000	45,000	63,000	Fort Wayne,	3,000	800	2.000
Lafayette,	25,000	15,000	15,000	Covington,	5,000	4.000	6,000
Lawrenceb'g,	13,000	9,000	10,000	Eugene,	6.000,	5,000	6.000
Connorsville,	——	1,000	7,000	Attica,	2,700	1.700	3,500
Evansville,	5.000	4,000	7,000	Dupin,	7,000	2.000	6,000
Laurel.	8,000	7,000	8,000	Terre Haute,	27,000	18,000	20,000
Brookville,	8,500	6,000	6,000				

ILLINOIS.

Places.	1843-4.	1844-5.	1845-6.	*Places.*	1843-4.	1844-5.	1845-6.
Alton.	37,000	16,000	23,000	Pekin,	20,000	10,000	——
Beardstown,	15.000	14,000	12,000	Quincy,	17,000	8.000	9.937
Griggsville,	3,000	2.500	3,500	Springfield,	16,000	3,000	3,400
Meredosia,	6,000	3,500	3,600	Whitehall.	8.000	1,000	1,200
Naples,	4,000	764	2,753	Winchester,	1,200	6,000	——
Peoria,	15,000	5,000	——				

MISSOURI.

Places.	1843-4.	1844-5.	1845-6.	*Places.*	1843-4.	1844-5.	1845-6.
St. Louis.	——	16,000	30,498	Missouri river,	——	——	22,000
Upper Miss. riv.,	——	——	41,000				

KENTUCKY.

Places.	1843-4.	1844-5.	1845-6.	*Places.*	1843-4.	1844-5.	1845-6.
Louisville,	68,000	42,000	101,000	Bowling Green,	7,000	7,000	10,000
Westport,	11,000	14,000	17,000	Clarksville, Ten.	2,000	5,000	5,000
Maysville,	14,000	7,000	7,500				

12.—NUMBER OF HOGS SLAUGHTERED IN 1847–8.

OHIO RIVER.

Wheeling	5.000	Wabash and White rivers	200.000
Cincinnati	475.000	Scioto Valley	100.000
Madison	75.000	Aurora	10.000
Louisville	100.000	Covington	6.000
Maysville	10.000		
Tennessee & Cumberland rivers	100.000	Total number,	1.031.000

MISSISSIPPI RIVER.

St. Louis	63.924	Quincy	20.000
Alton	35.000	Keokuk	10.000
Hannibal	20.000	Oquawka	5.000
Rockport	3.000	Bloomington	10.000
Lagrange and Tully	5.000	Fort Madison	10.000
Churchville	5.000	Burlington	15.000
Louisiana	5.000		
Warsaw	10.000	Total number,	216.924

ILLINOIS RIVER.

Peru	3.000	Point Isabel	5.000
Lacon	5.000	Beardstown	25.000
Peoria	25.000	Meredosia	10.000
Pekin	25.000	Naples	6.000
Lagrange	3.000	Griggsville	6.000
Canton	10.000	Tremont	1.500
Knoxville	10.000		
Springfield	2.000	Total number,	156.500

MISSOURI RIVER.

St. Joseph	5.000	Boonville	4.000
Weston	10.000	Rocheport	3.000
Lexington	2.000	Liberty	2.000
Camden	5.000		
Brunswick	5.000	Total number,	39.000
Glasgow	3.000		

Total amount of above tables, - - - 1.492.924

There are several small towns not embraced in the above table, which will probably swell the total to 1,500,000.

From the foregoing, we gather the following results for the last five years: Total number for 1843–4, 912,000; 1844–5, 642,000; 1845–6, 955,588; 1846–7, 300,000; 1847–8, 1,492,924.

The following statement has been furnished us of the operations of the several slaughterers in this city during the past season:

13.—NUMBER OF HOGS PACKED IN ST. LOUIS FOR THE SEASON 1847–8.

Mr. S. Finley	9.000	Finney	1.000
H. Ames	9.300	Waddingham	2.000
McAlisters	5.000	Schipman	1.272
Risley	7.000	Craft	1.050
Conn	5.500	Schœnthaler	800
Steitz	5.112	Shaffer	3.000
Bates	3.000		
McFaul	3.500	Total number	63.924
Sigerson	7.390		

From the foregoing statements, it will be seen that there has been an increase in the number of hogs slaughtered, amounting to 50 per cent. on the products of any previous year. In St. Louis, the slaughtering business has risen from 33,000 in 1846-7, to 63,000—about double—in 1847-8.

The following table furnishes a list of the number of hogs put up each year in Cincinnati, since 1833, inclusive, and the prices at which the market opened. The season begins in November and ends in March. Each year refers to that in which business closed.

Year.	No. Hogs.	Price.	Year.	No. Hogs.	Price.
1833	85.000		1841	160.000	$3.50a3.75
1834	123.000		1842	220.000	2.00a2.50
1835	163.000		1843	250.000	1.62a2.00
1836	123.000	$6.00a6 25	1844	240.000	2.25a2.65
1837	103.000	6.00a7.00	1845	213.000	2·50a2.70
1838	182.000	3.50a4.00	1846	287.000	4.00a4.25
1839	199.000	5.50a6.00	1747	250.000	2.70a2.80
1840	95.000	3.00a3.50			

14.—HOGS PACKED IN OHIO.

In 1844, 560,000; 1845, 450,000; 1846, 425,000; 1847, 325,000; of which aggregate, Cincinnati packed alone, in 1844, 43 per cent.; in 1845, 47 per cent. in 1846, 68 per cent.; in 1847, 70 per cent.

The entire packing of the West may be divided as follows:

	1844.	1845.	1846.		1844.	1845.	1846.
Missouri	16.000	31.700	70.898	Indiana	257.414	147.420	250.236
Tennessee	16.000	1.500	42.975	Ohio*	560.748	445.538	420 833
Kentucky	91.000	83.300	12.500	Union Pt.	1.200	8.830	18.675
Illinois	136.709	67.964	68.120				

* Five minor points in this state not ascertained, and not included in this list, are supplied by estimates in tables, showing the number of hogs put up in each year.

15.—PRICE OF PICKLED PORK IN NEW-YORK, FROM 1823 TO 1847 INCLUSIVE.

Year.	Mess.	Pickled.	Year.	Mess.	Pickled.	Year.	Mess.	Pickled.
1823	$13.31	$9.78	1832	13.77	11.22	1840	15.07	12.96
1824	13.78	10.32	1833	14.97	11.53	1841	11.36	9.48
1825	13.83	10.22	1834	14.20	10.21	1842	9.27	7.23
1826	11.55	7.84	1835	17.96	13.08	1843	10.32	8.59
1827	13.21	8.62	1836	23.13	17.65	1844	9.28	7.39
1828	13.71	10.06	1837	21.66	15.99	1845	12.13	9.51
1829	12.79	10.24	1838	21.97	16.59	1846	10.50	8.78
1830	13,64	9.37	1839	19.32	15.72	1847	15.00	12.58
1831	14.30	11.13						

But a small quantity of what is actually packed is exported to foreign countries, as is seen by the following table:

16.—EXPORTS, PORK.

Year.	Barrels.	Year.	Barrels.	Year.	Barrels.
1831	51.263	1837	24.540	1842	180.039
1832	88.025	1838	31.336	1843	80.310
1833	105.840	1839	41.301	1844	162.689
1834	82.691	1840	66.281	1845	161.609
1835	61.827	1841	182.399	1846	190.422
1836	22.540				

More than three-fourths of the exports are to the British Colonies, South America and the West India Islands.

EUROPEAN STATES AND POPULATION.

1.—THE PAPAL STATES.

The Hon. John A. Dix, Senator from the State of New-York, delivered in March last a most able and luminous speech on the propriety of sending a Minister to the Papal States. This speech embraces a full discussion of all the interesting questions which arise, and exhibits in striking colors the progress of liberal principles in Italy. We present the major portion of it to our readers, as most worthy of preservation and study.

The Pope is to all intents a temporal sovereign. He has been so for the last eleven hundred years. I believe the first territorial possession of the Pope was conferred upon him by Pepin, the father and predecessor of Charlemagne, in the eighth century. It consisted of the Dutchy of Rome, or, at that time, more properly called the Exarchate of Ravenna, and was wrested by the King of France from the Lombards, who had overrun northern and central Italy. It extended from the present frontier of Naples, on the Mediterranean, to the mouth of the Tiber, including the Southern Campagna and the Pontine Marshes, and running back to the Sabine and Volscian hills. In the twelfth century, the Countess Matilda, of Tuscany, bequeathed her possessions to the Pope. They embraced the patrimony of St. Peter, on the Mediterranean, extending from the mouth of the Tiber to the present frontier of Tuscany, and the march of Ancona on the Adriatic, with the adjoining district of Spoleto. Large accessions were subsequently made by conquest—Umbria, Romagna, Perugia, Orvieto, Citta di Castello, Bologna, Ravenna, and other cities and districts of country. In the seventeenth century, the Duke of Urbino abdicated in favor of the Pope; and at a still later period, some further additions were made by arms. Thus, the territorial possessions of the Pope are held, like those of other sovereigns, by succession, donation and conquest. I consider the territorial possessions of the Church as much the dominions of the Pope, as the territorial possessions of Spain are the dominions of her Most Catholic Majesty; and I see no more reason to decline diplomatic relations in the first case than in the last, unless there is, in other respects, a propriety in doing so.

It is true, there is a peculiarity in the form of the Papal government, from the fact that the temporal head of the State is also the spiritual head of the Roman Catholic Church. As is well known, the most important political body in the Roman States is the Sacred College of the Cardinals, who are the princes of the church. They are seventy in number, the same in number as the disciples sent out by the Great Founder of the Christian faith to preach the gospel to the world. Six are cardinal bishops, fifty cardinal priests, and fourteen cardinal deacons. I believe the number has been invariable for two hundred and fifty years, though it is not always full. All vacancies are filled by the Pope, who is chosen by the cardinals from their own body. The government is, therefore, an unlimited elective monarchy, or, if you please, a hierarchy, of which the Pope is the head.

The government is administered, under the direction of the Pope, by the Secretary of State, who is a cardinal. He is aided by several departments, bureaus, or boards, the chief of which is the Camera Apostolica, corresponding with our Treasury Department. It is under the charge of the Chamberlain, who is assisted by a number of cardinals and subordinates of different grades. There is also the Buon Governo, charged with the municipal police of the States; the Sacra Consulta, to which is intrusted the civil and political administration of the provinces; and the Sacra Ruota, the great court of appeals in judicial proceedings. There are several more of these boards, of which I do not remember the names or the functions; but they are all under the direction of cardinals. The Chamberlain is the only one of these executive officers who is appointed for life; and the reason for the distinction is, that he administers the government on the death of the Pope for nine days, when a new election takes place; and during that period, he has the privilege of coining money in his own name. The Secretary of State, who is the Prime Minister and the confidential adviser of the Pope, besides having the gen-

eral direction of the administrative functions of the government, presides especially over the Sacra Consulta, or the department for the provinces—to give it a name suited to its functions.

There is another class of official dignitaries of high rank, under the Papal government—the prelates. They are always of noble birth, but not always in holy orders. There are some two or three hundred of these dignitaries employed in various departments of the government, civil or ecclesiastical. The post of prelate often opens the way to higher preferment, and is next in importance to a membership of the Sacred College. These are the great officers of the government.

They usually, if not uniformly, occupy posts under the government. Some of them are governors of provinces, under the denomination of delegates; and many of them are employed in the executive departments. Some of them become cardinals; but I should not consider it accurate to say of them as a body, that they were undergoing an ecclesiastical apprenticeship.

Let me now turn to the political divisions of the Papal States.

The Papal dominions are divided into twenty provinces. The first is the Comarca of Rome The other nineteen are divided into legations and delegations. The former are six in number, and have each a cardinal to preside over them. The latter are thirteen in number, with prelates as their presiding officers. Each province is divided into communes, with peculiarities of local government.

In the provinces, the legations and delegations have a council, (Congregazione di Governo,) consisting of the Gonfaloniere, or mayor, of the chief town, and from two to five councillors, according to the magnitude and importance of the province. They are named by the Pope, and hold their office for five years. The councillors have no vote; but when they differ in opinion from the presiding officer of the province, their reasons are reduced to writing, and sent to the Secretary of State.

Some of the delegations are divided into districts, with governors subordinate to the delegates. Each district is again divided into communes, with their ancient magistrates and councils. These councils are close corporations, the members of which are self-elected, subject to the veto of the delegate, and retain their seats for life. A Gonfaloniere, or mayor, elected from their own body by themselves, presides over them. Of these communes there are some eight or nine hundred, if I remember accurately, with similar forms of administration.

Thus it will be seen that the whole government is as far removed as possible from popular influence. It is from the centre to the extremities founded and administered upon the principles of a close corporation; and this is its chief peculiarity.

The administration of justice partakes of the nature of the political organization. It is founded on the basis of the *Corpus juris civilis* and the *Corpus juris canonici* —the civil and canon law. All criminal proceedings are conducted with closed doors, and the testimony taken in writing. The accused is entitled to the aid of an advocate, called the "*avvocato de poveri*," (the advocate of the poor,) who is appointed by the Pope and paid by the government. Imprisonment is the chief punishment for crime; fines are rarely imposed; there is no such thing as liberation on bail; and the whole administration of criminal justice is so dilatory, that there are always a very large number of persons imprisoned and awaiting their trial.

In all I have said, it will be readily seen how much the present head of the Papal States has to reform—in the frame of the government, in its administration, and in criminal jurisprudence. There is no participation by the people in the administration of public affairs. In Tuscany, Napoleon introduced publicity in criminal proceedings, and it has survived all succeeding changes of the government. In Rome it is excluded. Whether it was introduced there by Napoleon after the deposition of the Pope and the establishment of the kingdom of Italy, I do not remember, but I have no doubt that it was.

What changes the Pope contemplates, how far he proposes to allow the people to participate in the administration of public affairs, through the choice of their own magistrates and the enactment of their own laws, I have until very recently considered doubtful—nor is the extent of the reform he contemplates very distinctly understood now. It will be recollected that a few months ago he called together a council of delegates from the different provinces. I read his opening address to them with great care, supposing it would contain an outline of the political changes he contemplated. He stated that he had called them together for consultation,

which seemed to exclude the idea of legislation; that extravagant expectations had been entertained as to his purposes, and that he intended to transmit to his successors unimpaired the authority he had derived from those who had preceded him. Not long before this annunciation was received, I was invited to attend a public meeting in the city of New-York, called to express the general sympathy which was felt in his measures of reform. Not being able to attend, I addressed a letter to the committee of arrangements; and there were several other letters written by gentlemen of distinguished character, and some of them occupying high official stations. Not feeling at that time quite sure of the sequel, I did not indulge in the enthusiastic expressions which some of the letters contained. I endeavored to render the Pope full justice. I desire to do so now. And I must say, that the recent intelligence from abroad justifies all the expectations which have been entertained in respect to his contemplated measures of reform. He has already done much for good government in Italy. He arrayed himself boldly at the outset against the influence of Austria—an influence which, since the general pacification of Europe, in 1815, has been a perfect blight upon the growth and progress of popular freedom. He has resisted fearlessly the designs of that government upon the independence of the Roman people. He has refused to the Austrian troops a passage through his dominions for the purpose of aiding the King of the Two Sicilies in putting down the struggles of the Neapolitan and Sicilian people against the narrow-minded tyranny by which they have been oppressed. He has done more. He has formed a national guard in the Papal States; he has put arms into the hands of the Roman people, and he is preparing them by military exercises, for the assertion and maintenance of their own rights. He has, in a word, given an impulse to popular freedom throughout Italy; and it is owing in a great degree to him, that constitutional forms of government have been given to the people of Sardinia, Tuscany, and the Two Sicilies.

The late arrival affords us still more gratifying evidence of his movements. Two papers have been put into my hands, from which I will read brief extracts. The first is from a letter in the Courrier des Etats Unis, dated in Paris, which I will translate literally;

"The reaction of the revolution in Naples has been felt, as I foresaw, in the other parts of Italy. The King of Sardinia and the Grand Duke of Tuscany have also given to their subjects a constitution, modeled after the French Charter. Pius the Ninth has promised, in a proclamation, and in conversation with those around him, something analogous to it. In the mean time he has changed his cabinet, and has formed a ministry composed almost entirely of laymen. This is a great reform."

The other extract is from the letter of the European correspondent of the National Intelligencer, published in this morning's paper. I will read it.

"The good and conscientious Pope has had misgivings as to his power to grant a reformed constitution to his people, fearing that his doing so would interfere with the oath which he took at his accession to office, to hand down the *temporalities* of his kingdom uninjured to his successors. He submitted his doubts to a council of ecclesiastics learned in such matters, and the result is, a decision that his yielding to the wishes of the people and the spirit of the times, will not be an infringement upon his official oath. It is supposed, therefore, that the people of Rome will soon receive a constitution, founded on the same principles as those of Naples, Sardinia and Florence. His Holiness has advanced a great step, by his employment of well-qualified laymen to high positions in the State, which have hitherto been filled by ecclesiastics. Three vacancies lately occurred, and three liberal-minded laymen succeeded three churchmen. How much does the world owe to Pius IX.! His liberal conduct first put the ball of reform in motion: it is not destined to stop until it has regenerated Europe."

Thus it appears that the Roman people are to receive from the Pope a Constitutional Government. And, what I consider of great importance as a measure of reform, he has already begun to introduce laymen into his political councils. At the general pacification, in 1815, it was understood that the chief ministers of the Pope were to be chosen from the laity. This understanding was violated; and it has been one of the leading causes of public discontent in the Papal States. It has been for a very long period one of the reforms most earnestly sought for; and it may be hailed as the precursor of an ultimate separation of the ecclesiastic and secular branches of the Papal government, by conferring political offices on laymen, and confining churchmen to the exercise of their ecclesiastical functions—an arrangement favorable alike to the Church and the State, by promoting the purity of the one and the prosperity of the other.

While the Pope has much to reform, he has much to contend against—not only

from the opposition of those who are hostile to all progress, but from the embarrassed condition of the finances of the Papal States. Some ten years ago, the revenues were about nine millions of dollars; two millions and a half were derived from internal taxes, chiefly on landed property; about four millions and a half from the customs, excise, &c.; about nine hundred thousand dollars from lotteries, and the residue from miscellaneous sources. Some of these revenues were collected at an enormous expense. The revenue from lotteries, for instance, which yielded nine hundred thousand dollars in the gross, cost about six hundred thousand in the collection, leaving only three hundred thousand in the treasury as an offset to the general demoralization of which they were the cause. In the same year, the expenditures exceeded the revenues about half a million of dollars. Four years ago, I understood the deficiency exceeded a million, and the preceding year a million and a half. From the difficulty of obtaining statistical information, I could not ascertain the amount of the public debt; but from the interest paid on it, amounting to about two millions and a half of dollars, exceeding one-quarter of the entire revenue of the Papal States, it must have exceeded forty millions of dollars. It cannot now, I think, be less than fifty millions. It may be much more.

Sir, this is a very heavy pecuniary burden for a small state. The whole superficial area of the Papal States is about thirteen thousand square miles—less than one-third the area of the State of New-York; and a population, according to the raccolta or census of 1833, of two million seven hundred thousand souls—about the same as the population of New-York. While Rome has two hundred and ten inhabitants to a square mile, from the difference in surface, New-York has but sixty. The population of the Papal States is very unequally distributed. Only about one-third of the surface is cultivated, and a considerable portion is very thinly inhabited. I doubt whether the population has much increased during the last fifteen years. In 1833, the city of Rome had about one hundred and fifty thousand inhabitants; in 1838, it had less than one hundred and forty-nine thousand—a slight decrease.

The Papal States have some commerce; but little is carried on in her own vessels. There are but two harbors for vessels of any considerable burden—Civita Vecchia, on the Mediterranean, and Ancona, on the Adriatic. The excellence of both ports is due, in a good degree, to the Emperor Trajan. There were other valuable ports once, but they have become useless for large vessels. Terracina, the ancient capital of the Volsci, was formerly a naval station of great importance; but is now obstructed by deposits of sand. The Porto d'Anzo—the ancient Antium—about midway between Terracina and the mouth of the Tiber, is also obstructed, and nearly useless, from the same cause.

There is but one navigable river in the Papal States—the Tiber. As there have been some allusions to it in the course of the debate, I hope I shall be excused if I make some references also to its condition as to commerce and navigability. It empties into the Mediterranean seventeen miles from Rome. As it approaches the sea, it divides into two channels. On the left arm stood the ancient Ostia. It has long since fallen into ruins, and a modern Ostia stands near it; but, from the unhealthiness of the place, it is almost deserted, and the channel of the river is nearly filled up. The right arm is navigable to the sea. On this channel stood the ancient city of Portus; but only the ruins are now visible, and the modern town of Fiumicino has risen up a mile and a half below. The channel is narrow, deep and rapid. The description of Virgil, as he makes Æneas first see the Tiber, is still applicable to it. I do not know that I can quote him accurately, but if I do not, there are gentlemen of classical learning on both sides of the Chamber who will correct me:

> ——"fluvio Tiberinus amœno,
> Vorticibis rapidis et multa flavus arena,
> In mare prorumpit."

The description is not inaccurate: with rapid whirlpools, and yellow with earth, it bursts into the sea. The current is so rapid, that vessels could only stem it with strong winds; but they are now towed up by steamers. Vessels of small size—among them a steamer—go up to Rome, and at some seasons there is a good deal of freighting done on the river. Indeed, it is navigable for boats to its junction with the Nera, some forty miles above. But, from the rapidity of the

current near the city and below, deposits of sand are constantly obstructing the passage, and an annual appropriation of money is made to keep it open.

The exports of the Papal States are not large, but they are numerous. They consist of corn, oil, silk, skins, fruits, woad a substitute for indigo, which grows spontaneously in southern Italy, hemp, &c. Wool is exported in large quantities to England; and among other exports, is tobacco, of which they send abroad annually about three hundred thousand pounds.

They can scarcely be said to have a commercial marine. Some ninety vessels, averaging probably about eighty tons each, constitute the whole, excepting fishing smacks and small coasters. There are six merchant vessels in the city of New-York with an aggregate tonnage exceeding that of the ninety merchant vessels of the Roman States. This, however, we need not regret; for if we can extend our commercial relations with them, we shall do all the carrying, both for them and ourselves. Agriculture, the basis of all industry, is in a very depressed state, and from peculiar causes. The great peculiarity of the agriculture of the Papal States is the division of the champaign land into immense farms. The Campagna around Rome, called the "Agro Romano," (the Roman field,) the Maremma, extending from the frontier of Tuscany, along the coast, to the southward, and the low lands in other districts, are owned by a few persons. The farms usually contain several thousand acres. The entire Agro Romano, comprising more than one-fifth of the Campagna, contains over eight hundred and fifty square miles. This tract is in the hands of about forty farmers, or "Mercanti di Campagna," as they are called. The farms are worked on the "Mezzeria" system, or at halves, under the direction of fattori, or stewards, who occupy farmhouses on the land, while the owners live in the cities. The same system prevails in Tuscany, where it has worked tolerably well. In Rome it is thought exceedingly unfavorable to agricultural improvement. Something is attributable to the peculiarity of the Roman plain, in respect to climate and health, which renders it necessary to devote the greater part to grazing. In the winter it is covered with cattle and sheep—not less perhaps than a million of both, under the guardianship of shepherds and herdsmen. As the summer advances, the Campagna becomes too unhealthy to be inhabited, and the cattle are driven to the Sabine hills, and even to the mountains of the Abruzzi. When the harvest season arrives, the heat becomes almost intolerable; and multitudes of the laborers, who come down from the mountains to gather the harvest, perish from the fatal effects of the malaria. As soon as the grain is gathered, the Campagna becomes a desert until the summer heats are over. Neither men nor cattle are to be seen. The buffalo, who seem to be proof against the heavy pestilential vapors which the burning sun brings out from the humid earth, are almost the only inhabitants of the deserted plain from June to October.

With this imperfect agriculture, a complete monopoly is given to the rural proprietors by the corn-laws of the Papal States. When the price of flour on the Mediterranean is under $9, and on the Adriatic $8 25 per barrel, the introduction is prohibited. It is the same with wheat. When it is under about $1 40 the bushel on the Mediterranean, or $1 20 on the Adriatic, it is not allowed to be introduced. The operation of this system is to give the entire market to the Roman agriculturist, and by excluding the cheaper breadstuffs of the Levant and the Austrian provinces on the eastern shore of the Adriatic, to compel the Roman people in some districts, and in times of scarcity, to eat dear bread.

Notwithstanding the depressed condition of the industry of the Papal States, there is no country capable of a more rich or varied production; and if the measures of reform now in progress shall be carried out, and the social as well as the political condition of the people be elevated by the abrogation of bad laws, I know no State of the same magnitude which may hope for a higher prosperity.

But I look chiefly to commerce. Depressed as the industry of Rome is, I think something may be done to extend our commercial relations and intercourse with her, and perhaps also with Tuscany, lying on her borders. Great Britain has an immense trade with the Mediterranean. She sends every year fifteen millions of dollars in value of her own products into Italy alone, and probably several millions more of foreign products, which she imports for re-exportation. A portion of this lucrative trade legitimately should be ours; and, I think we may obtain it, if we send a discreet and intelligent man to Italy.

2.—POPULATION OF FRANCE.

In our April number we gave an elaborate sketch of the agriculture and agricultural wealth of France; we now give some of its statistics.

Official returns divide the whole population into six classes—three degrees of ignorance and three of instruction—as follows:

IGNORANCE.

1st—Unable to read and to write	16,855,000
2d—Able to read, but not to write	7,097,000
3d—Reading and writing, but incorrectly	6,968,000

INSTRUCTION.

4th—Reading and writing correctly	2,430,000
5th—Having the elements of classical education	735,000
6th—Having completed their classical studies	315,000
Total	34,400,000

Of these, however, the following calculation shows that not one half were entitled to vote at the last election:—

The number of females in France is	17,232,000
Under 21 years of age	8,287,000
Of 21 years of age or above	8,956,000
The total of the male population is	17,168,000
Under 21 years of age	8,252,000
Of, or above 21 years of age	8,916,000

There are therefore 8,916,000 voters who are thus divided:

1st—the working classes and paupers	6,585,000
2d—Manufacturing, trading and agricultural capitalists	927,000
3d—Learned professions, and independent incomes	425,000
4th—Paid Officials, army, navy and pensioners	379,000
Total	8,916,000

Of the 6,585,000 belonging to the first class, 5,591,000 are in a state of ignorance, most of them unable to read or write; and in the fourth class there is also a sad deficiency of knowledge, as out of 1000 recruits, 500 do not know their alphabet.

MISCELLANIES.

1.—GALVESTON AND RED RIVER RAIL-ROAD.

An act has passed the legislature of Texas incorporating the above road, and efforts are now being made in that state in order to carry out the enterprise.

An address has been made setting forth the claims of this road, from which we take the liberty of extracting:

The contemplated road is designed to connect the navigable waters of the Red River above the raft, and all that immediate section of valuable and productive country lying south of it, by the most expeditious, safe, and economical means of transportation to this city. Its precise route is a matter which can only be ascertained by a careful survey, and must be finally decided by the agents of those who shall furnish the capital for its construction.

It is believed safe to expect that the country on each side of the road, for at least 50 miles distant, will seek its facilities by this route in preference to any other that can be obtained. The counties last named contain, according to the assessment rolls returned for 1847, 9,473,930 acres of land, which may be set down at ten millions of acres; and allowing the estimate of the increase to be five dollars per acre, as an average, and we have an increase of the value of the real estate in these counties amounting to the sum of forty-five millions of dollars. This es-

timate will give to the district of country mentioned, an increase of value, in real estate alone, of sixty millions of dollars.

We would first call your attention to the present condition of that portion of the state through which the proposed road will pass. The Northern or Red River counties of this section of the state, including the counties of Grayson, Fannin, Lamar, Red River, Bowie, Cass, Titus, Hopkins, Hunt, Collin, Denton and Dallas, are now estimated to raise about 40.000 bales of cotton, which finds its way to market mostly by Shreveport, at an expense, including hauling and freight, of about five dollars per bale, and is exposed to all the losses, damages and uncertainties of the Red River navigation. The counties named, are capable of producing not only an almost incalculable amount of this great staple, but also an immense amount of wheat and other cereal grains, tobacco, flax, hemp, pork, fruits and other domestic products of the farm, which will not bear transportation to market. They contain, according to the tax returns of the assessors in 1847, 3,674,719 acres of land, and the probability is that five million of acres would be a nearer approximation to the truth. These lands now average a nominal value of fifty cents per acre, and could not be sold at half that price for cash. With such facilities to market as a railroad to Galveston would give, it is safe to estimate the quantity of cotton produced five years hence at two hundred thousand bales, and the other products of the country at an equal amount in value. The lands would rapidly appreciate, and the average may be safely estimated at three dollars per acre, thus increasing the wealth of the country, by the appreciation of real estate alone, at least ten fold; to this should be added the reduced expense of transportation to market, which would be about one half, besides the advantages of certainty, safety and despatch, and which would have saved the country, during the past season, at least one hundred thousand dollars. This same district of country has lost, by delays in getting the cotton to market, during the past winter, in season to take advantage of the fair price of cotton, at least four cents on the pound, which, estimating the cotton at four hundred pounds to the bale, makes a further loss of eighty thousand dollars. So that we have a loss to the counties named, during the past season, of at least one hundred and eighty thousand dollars for the want of those facilities to market which the projected road would afford. If the advantages which we have above stated, (and we believe them to be but a small part of the truth) can be obtained by the construction of this road, we ask, what amount of land can you afford to give, to ensure its construction? With a donation of the half, you will have made a large speculation, by an appreciation of five hundred per cent. on the whole quantity.

To our fellow-citizens of Galveston, we would say, this enterprise demands and should receive your most hearty and sincere co-operation. Its success will fill your wharves and ware-houses with produce and your harbor with shipping—with the exception of New-Orleans, you will rival every city south of New-York. Its success will excite the inhabitants of the Brazos, the Colorado and the Gaudalupe to lend a helping hand for the construction of those branches, which a liberal charter permits this company to construct; and the entire trade of this state, with the exception of the immediate coast, will pour its wealth into your city. The extensive navigation of Red River, west of the terminus, will bring you the trade of New Mexico and Chihuahua, which are sure to become of immense value.

2.—STATISTICS OF THE QUARTER-MASTER'S DEPARTMENT, N. ORLEANS.

Mr. Clairborne has compiled the following from the books of the department.

Eight steam-ships are owned and regularly employed in transporting munitions of war, troops, &c.; ten steam propellers; two ships; two brigs; one barque; twenty seven schooners. Besides the above, at various times have been chartered, twenty-two steam-ships, seven ships, nineteen barques, thirty-nine brigs and seventy-five schooners.

STORES SHIPPED FROM NEW ORLEANS TO ARMY FROM JULY 1, 1847, TO MAY 1, 1848.

Bushels of Oats,	465.542
Bushels of Corn,	117.606
Pounds of Hay,	6.105.637
Barrels of Coal,	149.226

Horses,	3,733
Mules,	615
Lumber assorted, number of feet,	775,148
Iron, " " "	732,062
Oils, " " gallons,	11,600
White and Black Lead, pounds of	28,925
Nails assorted, pounds of	102,973
Rope " " of	116,733
Wagons, nnmber of	475
Mule Shoes, number of	83,000
Horse " " of	31,000
Mississippi water, gallons of	98,470
Copper, pounds of	36,064
Leather, pounds of	50,000
Tar, barrels of	500

In addition to the above, about 25,000 barrels of subsistence stores have been sent forward, and 200,000 packages of Quarter-Master's stores, camp and garrison equipage, ordnance stores, and clothing for the Army, which it would be impossible to enumerate, in this brief statement.

The amount of fuel and forage purchased in the city of New-Orleans during the period stated, as follows, viz:

Coal, barrels of	290,000
Oats, bushels of	440,000
Corn, bushels of	100,000
Hay, pounds of	6,050,000

During the same period some 15,000 troops and 3,000 teamsters, with their arms, ammunition, camp equipage, &c., have been sent out from this point, besides the provisions for the army, ordnance, military stores, &c.

3.—MANUFACTURES ON THE OHIO RIVER.

Important elements of a manufacturing district, says a writer of a series of papers in the *Louisville Journal, are facilities for moving man and matter, and proximity to the raw material and to the market.* These are resolved into cost of transportation.

General impressions on this point are very erroneous; and, as the result of my statistics may far exceed the belief of those who have not investigated the subject, I give the facts for the full examination of all who feel an interest in them.

In these articles I refer specially to the cost of manufacturing and vending cotton goods, because this branch of manufacturing is of more importance and better understood than any other.

Some years since a pamphlet was published in England, by Mr. Graham, on "The Impolicy of the Tax on Cotton Wool." In this is an affidavit of Mr. Gemmell, of Glasgow, who states, "that, although he was for several years in the habit of supplying Chili with cotton domestics, he has latterly been obliged to abandon the trade, in consequence of being unable to compete with the manufacturers of the United States."

Chili is a market equi-distant from the two competitors for her trade. What gave New-England such an advantage over cheap labor, cheap coal, and cheap capital of England? The difference in the cost of transportation on the raw material.

In 1839–'40, Montgomery gives this estimate of the cost of importation of cotton to the British manufacturer, the first cost of the cotton being 14 cents per pound.

Charges on shipment,	4 per cent.
Freight and insurance,	12½ "
Importer's profit,	5 "
Inland carriage,	1½ "
Duty,	4½ "
Total average,	27½ "

While the average cost to the N. England manufacturer is stated at 11 per ceent.

The estimate of the actual charges of manufacturing in the two countries gives an average of six mills per yard against us; yet, taking both charges into the estimate, the net advantage was three per cent. in our favor; and besides this, our goods were the best.

Since 1840, the British Government has been obliged to take off the duty, but it could not lessen the cost of labor, of power, or of capital. The wages of the operative then were barely enough to support life; the cost of coal must increase as the seams nearest the surface are exhausted; and it is doubtful whether the capital then invested in the cotton mill was paying any interest.

The changes that have since occurred on this side of the water have all been in our favor; that is, so far as the cost of manufacturing is concerned. More experience has given us greater skill; we have more system, and more economy; new facilities of intercommunication have brought our producers and manufacturers of cotton nearer to each other and lessened the cost of their mutual exchanges; but, more than all, the cost of labor, in which England had so much the advantage, has been lessened over one-half: that is, less than one-half is now required. Besides, of late years the supply of cotton has been so near the demand, that the price has fallen from 14 cents per pound to an average of 8 or 9 cents; as the cost is reduced our relative advantage is increased.

From these facts we have this *corollary*: that, *as the cost of labor, power, and material is reduced, the cost of transportation rises in importance.*

If England cannot profitably compete with us in the Chili market, certainly she cannot compete with us here; for the width of the Atlantic gives us a protection, directly or indirectly, of at least 15 per cent. *ad valorem.*

In point of fact, just as fast as the American manufacturer is able to supply the home demand in any article, the English manufacturer is driven from our market, unless, to raise money or to break down a rival, he is prepared to sell at less than cost. It is to be hoped that the wages of labor in this country will never be so low that we can compete with China in embroidered shawls or ivory trinkets: or with France and Germany in tapestry or laces made by hand. In such fabrics the cost of transportation bears but a slight proportion to the cost of labor.

It is clear, then, that England cannot sell coarse, heavy, and cheap goods in this valley in competition with our own manufacturer. Let us see if New-England can.

In 1821, as I am told, the first mill for spinning cotton yarn on an extensive scale was established on the Ohio. Now, who sees in our stores a hank of English or Eastern cotton yarn? The same cause that has produced this result—that is, the cost of transportation—must, in a few years, build up all the mills we need to supply us with "domestics."

To see what the precise inducements are to start such a mill here, I give the following details of the cost of transporting cotton from its point of production to us and to the New-England mill, and of the goods from the mill to us. It is clear that the difference in the first and the amount of the last give the sum of our advantages in this item, at least to the extent of our home market.

I base my estimates on a mill of 10,000 spindles for convenience, and because that is near the most economical size. It will be borne in mind that the calculation includes the cost of machinery for preparing the cotton and weaving the goods.

At almost any point on the Ohio river the cost of building is less than in Massachusetts. We have stone, lime, clay, and generally, lumber on or near the spot. There the lumber and lime is brought from Maine; but few positions furnish good clay for brick; and granite is not as easily worked as our lime or sandstone. The moment there is a demand for it, machinery can be made here 20 per cent. cheaper than at the East. The cost now would be nearly this:

The factory building of brick or square stone ruble, . . .	$30,000
House for superintendent, ...	3,000
Twelve boarding-houses for 225 operatives, ...	10,000
Warehouse and store, ...	2,500
Engine, gearing, and pipes for heating mill, put up, . . .	8,000
Machinery, at $12 per spindle, ...	120,000
	$173,500

Brought forward,	$173,500
Here a working capital, sufficiently large to lay in a stock of cotton for five months, is	46,500
Capital stock,	$220,000

This estimate is larger by $20,000 to $30,000 than that made by persons who have far more practical knowledge on the subject than I have.

The longer the material and its product are *in transitu*, or, in other words, the further the manufactory is from the raw material and the market, the larger must be the working capital; and the interest on the difference is fairly a part of the cost of transportation. And besides, as England and New-England are obliged to enter the cotton market once a year, and at the same time, and at the very time when our other great staples are ready for shipment, prices and freights are then generally at their highest rates; sometimes, as we have seen, sufficient means of transportation cannot be had at all; to guard against this contingency, as well as the fluctuations of price, many mills keep a heavy surplus stock. We can command the market at all times; we are always ready to contract, and can select our own time to receive the cotton. We are here, also, at the point of consumption; we cannot for years supply the home demand, and our goods will be taken as fast as they are made.

With these facts in view, it is very safe to say that the New-England mill requires a working capital of $100,000 more than ours; but, to be altogether within the mark, put it at $50,000; the interest on this is the first item of saving or advantage to be carried out—say per annum $3,000. As we can turn over our capital more than once a year, and its earnings at each time will exceed 6 per cent., we might with propriety make the item much larger.

At Lowell there are forty-five mills, containing 253,456 spindles, and with a capital of $11,490,000, or, over $450,000 for every 10,000 spindles. If $50,000 is deducted for capital required to purchase the power, $50,000 more to cover the difference in communicating the power and the additional cost of buildings, the working capital would seem to be $130,000 over that required here by my estimate. But I am not advised as to how much of this capital is required to enable the mill to sell on credit, or whether the surplus fund, usually laid aside out of profits, is sufficient for this purpose. The Lowell corporations rarely publish the amount of their reserved funds, or even of their profits, unless when they are remarkably low.

The mill in question will turn out on the average, two tons of goods a day—say 600 tons per annum. The English estimate of waste and loss is one-sixth; our rule gives 89 pounds of goods for 100 pounds of cotton; by this, the mill will require 666 tons of cotton per annum.

The following estimate of the cost of bringing dry goods to Louisville from Boston, *via* New-Orleans, was obtained from one of our largest dry goods houses, and I feel confident that the rates are below the average:

Boston wharfage per bale,	02½
Freight to New-Orleans per bale,	45
Charges at " "	30
Insurance, 2 per cent., on $66, or on cost and 10 per cent. added,	1 32
Interest *in transitu*, 40 days,	40
Exchange ½ per cent.,	30
Freight to Louisville,	62½
	$3 42
Add average cost on the bale from the mill to and at Boston, at least,	40
	$3 82

The bale, 4-8 brown cotton, of 750 yards, average cost $60; 3 yards to the pound. This gives over ½ cent to the yard, 1½ cents to the pound, and $30 per ton.

There are, however, but few houses that ship by New-Orleans, and at times when freights are low; altogether the largest portion of the brown cottons and prints brought to the central West come from the Eastern agent or jobber, and by the lakes or across the mountains.

This is the *ordinary* course of trade, and there is no reason why we should

not base our estimates on what is usually done, if the same system is likely to continue.

By these last routes, as every dry goods merchant (wholesale) can satisfy himself by reference to his books, the average freight from the eastern cities is from two-thirds to three-fourths of one cent. per yard. If to this is added the coastwise freight, insurance interest, profit of the jobber, or commission of the second agent, the cost will swell up to at least 1 cent per yard, 3 cents per pound, or $60 per ton.

But, as I have often been told, the agent at Baltimore will sell domestics just as low as they can be had at Boston or Lowell, and the Philadelphia jobber will often sell lower to draw in customers, as he relies for his profits on other goods. All very true; but a moment's reflection will satisfy any man of the fallacy of this reasoning. The manufacturer may wish to get rid of his surplus, and find it his interest to pay the transportation to, and the commission of an agent in a remote market, but this does not lessen the actual cost of the transportation or agency. The jobber may entice a customer into his store by selling silver at fifty cents an ounce, but this does not prove that the ounce of silver is actually worth less than a dollar. The same kind of argument is often applied to cost of transportation on our river. The Peytona will ask $5 from a passenger to Louisville, who calls her in at Brandenburg, and the price would be the same if he got in at Cairo; yet the writer on the western carrying trade would be laughed at, were he to state that the cost of transportation from Cairo and Brandenburg to Louisville was the same. Coal often sells for a less price at St. Petersburg than at Newcastle; yet no one has attempted to show that the shipment of coal a thousand miles lessons its cost, or that St. Petersburg is the proper site of manufactures, because coal was sold there at a particular day cheaper than at the English coal mines. The balance sheet of every business must show the profits or losses in each of its branches. The high prices demanded by the larger boats for way-passengers and freight have introduced the river packets, and the extra costs paid by the eastern manufacturer are now building up the western mills.

To return to the figures: the mill given will consume 666 tons of cotton per annum,

Freight from the cotton districts of Nashville, Florence, Tuscumbia, and points on the Mississippi river in Tennessee and Arkansas, and on the Arkansas river, are about the same to Louisville as to New-Orleans. As the river packets multiply, the rates in this direction will probably be lower. Besides, as our agricultural exports increase, the return boats will run light and charge less. Our mill, then, will save the charges on the cotton at New-Orleans and the cost between that city and the New-England mill. I have not access to a series of New-Orleans prices-current, but I presume the following estimate will not be wide of the mark:

Drayage, storage, brokerage, and commission of agent or merchant at New-Orleans per bale of 450 pounds,	$1 00
Insurance on $36 or 8 cents per pound,	50
Freight ⅜ cent per pound,	3 33
Interest, 45 days,	27
	$5 15

I might add 1 per cent. loss on exchange, as the cotton is generally paid for by 60-day bills—

Or 1 14-100 cent per pound, on per ton,	$22 00
Add charges in Boston,	10
Average freight to the mill,	2 70
Total per ton,	$25 80
666 tons required at $25 80 gives	$17,182 80
Add saving in capital per annum	3,000 00
Add minimum freight on goods or $30 per ton on 600 tons	18,000 00
Minimum advantage,	$38,182 80

But if we add the ordinary freight on the goods, or $60 per ton, we have the *maximum* advantage of $56,182 80, or an average of $47,182 80 on a capital of $220,000, or near 21¼ per cent.

I say nothing here of the great saving in fuel and in food; to these points, and to giving an aggregate of advantages, I propose to devote another paper.

I believe the foregoing estimates are within the truth, and that I have not been able to get at all the items of cost; indeed, many of these are of such a character that they cannot well be specified; such, for instance, as the expenses and time of the merchant who goes abroad to make his purchases, occasional loss on exchange, and all the contingencies to which a trade between distant points is subject.

It will be noticed that nothing is said here of disadvantages; there are some, and I will endeavor hereafter to state them fairly, and then perhaps you will be surprised to see how few there are, and how easily these can be surmounted.

I have been furnished with the following estimate, which nearly corresponds with the foregoing, and from a source perhaps more reliable than any other in New-England. The comparison is between Massachusetts and Pittsburg:

A mill of 10,000 spindles will turn out 4,000,000 yards of No. 14 sheetings or shirtings, and consume 1,400,000 pounds of cotton in one year. The difference in the cost of the raw material and the cost of sending the manufactured goods to the West, including interest, is, as near as can be estimated, *one cent per yard*, or $40,000 in one year's work.

If there is but even 15 per cent. advantage (and I challenge the production of *facts* to show that there is not 20 per cent.) in this single item of cost of transportation, how long before our men of capital, who, at most, can get 10 or 12 per cent. interest on moneyed loans, will engage in manufacturing? It needs but the establishment of a single mill on the Lowell system and the making of a single dividend, to draw the attention of every man among us who has spare funds sufficient to buy a share of stock. S.

4.—STATISTICAL COLLECTIONS OF THE SEVERAL STATES.

It is impossible to know as minutely as the purposes of trade and legislation require, all the statistics of the states of this Union, from the reports of the general government, however perfect they may be. The home trade can seldom appear in the figures of government, as it is too far removed to collect with facility all the minor details of the movements of states and cities, which make a part of, and influence the commerce of the country. Each state should in fact have its own department of statistics, and it would be very easy from all the reports to make up a general summary at Washington every year.

In this view we take pleasure in calling attention to the initiatory movement made in Louisiana, for the establishment of a *Bureau of Statistics*, and publish, for the information of all, and in the hope of getting returns from some, the circular of the department.

BUREAU OF STATISTICS—DEPARTMENT OF STATE,
New-Orleans, 1st July, 1848.

SIR—A Bureau of Statistics having been established, and the undersigned entrusted with its charge, he begs to invite from citizens in every section of the state, such information as they can impart in regard to its present condition and past history.

The appended queries will give an idea of the character of the facts required, and will be suggestive of others. The plan of the Bureau contemplates *every kind of information concerning the state*, and it will be in the power of most persons to communicate something, upon one or more of the heads. It is of very great importance that the report, contemplated to the next legislature, be *complete*.

The aid of the members of the legislature, editors, public officers, citizens, &c., in all the parishes, is invoked, and will be most gratefully acknowledged.

Donations of old files of newspapers, records, etc., to be deposited in the Bureau, will be thankfully received and acknowledged. J. D. B. DE BOW.

I. Time of *settlement* of your parish or town; dates of oldest land grants; number and condition of first settlers; whence emigrating; other facts relating to settlement and history.

II. *Indian names* in your vicinity; what tribes originally; what relics or monuments of them; if Indians still, in what condition?

III. *Biography*, anecdotes, &c., of individuals distinguished in your vicinity in the past for ingenuity, enterprise, literature, talents, civil or military, &c.

IV. *Topographical description* of your parish, mountains, rivers, ponds, animals, quadrupeds, birds, fishes, reptiles, insects, &c., vegetable growths, rocks, minerals, sand clays, chalk, flint, marble, pit coal, pigments, medicinal and poisonous substances, elevation above the sea, nature of surface, forests, or undergrowth, what wells and quality of well water, nature of coasts, does the water make inroads, mineral springs, caves, etc.

V. *Agricultural description* of parish; former and present state of cultivation; changes taking place; introduction of cotton, sugar, rice, indigo, tobacco, grains, fruits, vines, &c. &c.; present products; lands occupied and unoccupied, and character of soils; value of lands; state of improvement; value of agricultural products; horses, cattle, mules, hogs, and whence supplied; profits of agriculture, prices of products; new estates opening; improvements suggested in cultivation, and new growths; improvements in communication, roads, bridges, canals, &c.; kind and quantity of timber, fuel, &c.; state of the roads, summer and winter; kinds of enclosures, and of what timber; manures; natural and artificial pastures; agricultural implements used; fruit trees, vines, and orchards; modes of transportation; extent of internal navigation; levees, &c.; modes of cultivating and manufacturing sugar in use.

VI. Instances of *longevity* and *fecundity*; observations on diseases in your section; locations, healthful or otherwise; statistics of diseases; deaths; summer seats, &c.

VII. *Population* of your parish; increase and progress, distinguishing white and black; Spanish, French, American, or German origin; foreigners; classes of population; number in towns; growth of towns and villages, etc.; condition, employment, ages; comparative value of free and slave labor; comparative tables of increase; marriages, births, &c.; meteorological tables of temperature, weather, rains, &c.

VIII. *Education and Religion*—Advantages of schools, colleges, libraries enjoyed; proportion educated at home and abroad; expense of education; school returns; churches or chapels in parish, when and by whom erected; how supplied with clergy; how supported and attended; oldest interments; church vaults, &c.

IX. *Products in Manufactures and the Arts*—Kinds of manufactures in parish; persons employed; kind of power; capital; wages; per centum profit; raw material; sugar and cotton machinery and improvements; kind and value; manufacturing sites, &c.

X. *Commercial Statistics*—Value of the imports and exports of Louisiana with each of the other states of the Union, as far as any approximation may be made, or data given; growth and condition of towns; increase in towns, &c.

XI. *General Statistics*—Embracing banking, railroads, insurances, navigation, intercommunication; learned and scientific societies; crime, pauperism, charities, public and benevolent institutions; militia, newspapers, &c.; application of parish taxes; expenses of roads, levees, &c.; number of suits decided in different courts: expenses and perfection of justice; number of parish officers, lawyers, physicians, &c.

XII. Date, extent, consequences, and other circumstances of droughts, freshets, whirlwinds, storms, lightnings, hurricanes, or other remarkable physical events, in your section from remote periods; other meteorological phenomena; changes in climate, &c.

XIII. Literary productions emanating from your neighborhood; your associations, if any; what manuscripts, public or private records, letters, journals, &c., or rare old books, interesting in their relation to the history of Louisiana, are possessed by individuals within your knowledge. State any other matters of interest.

☞ Our book table is much neglected this month. Our advertisements are left out, for which due atonement shall be made to the parties. The article on silk will be continued in our next. We have several other valuable papers on the table for publication.

Hon. H. Johnson and Hon. S. Downs will receive acknowledgments for important Congressional papers. There are several books and pamphlets on our table, of which notices shall appear in the August number.

It pleases us to inform our subscribers that with this number we begin a new era in the publication of the Review. There shall be no more delays, but the utmost regularity, and an improved *monthly* issue. Let our friends show themselves by extending the *circulation* and increasing the *income* of the work. We pray for *prompt and punctual remittances from all.*—[*Editor.*

Several lamentable typographical blunders were permitted in consequence of the Editor's absence, in the *April* number, particularly in the article by our friend J. P. Benjamin, on the *Saccharometer*. We almost determine to republish his valuable paper. Similar errors are found in the article on *Silk*.